NORTH CAROLINA MEDICAL JOURNAL

OWNED AND PUBLISHED BY
THE MEDICAL SOCIETY OF THE STATE OF NORTH CAROLINA

VOL. 4 MAY, 1943 NO. 5

GOLD THERAPY IN RHEUMATOID ARTHRITIS

HARRY WINKLER, M.D.

CHARLOTTE

Any new therapeutic agent advocated for the treatment of a chronically progressive disease that has resisted all previous attempts at solution is bound to be subjected to a great deal of criticism. Yet, critics of such a remedy which may possibly be classified as dangerous in the light of our experience should be prepared to offer a better aid to the patients who are turned away from many a doctor without hope. It was Osler who said, "When I see an arthritic come in the front door, I want to go out the back one."

Rheumatoid arthritis is of unknown etiology. It may be infectious in origin, but if so, the infective agent is still unknown. Its course of steadily progressive deformity, ankylosis, invalidism, and permanent disability continues to challenge the best medical thought for its cure. The remedies that have been employed are legion. No single measure has yet stood the test of time and experience. In our own experience we have tried vaccine therapy, bee venom, chaulmugra oil, salicylates, sulfur therapy, fever therapy, and many other remedies. The search for a specific curative agent goes on. The modes of treatment are still varied. At each meeting of the American Rheumatism Association the numerous therapies presented bear witness to the fact that no agent has yet been found that will cure this disease.

Moellgaard[1], Feldt[2], and Forestier[3] in about 1928 began some experiments with the use of gold in tuberculosis. Forestier believed that this agent might be of value in chronic rheumatoid and infectious arthritis. He has treated hundreds of cases by this method, and has announced that, when properly administered, gold gives better results in this disease than any method of treatment previously employed in France.

Hartfall and his colleagues[4] employed chrysotherapy in the treatment of 750 cases of rheumatoid arthritis in England. They concluded that this is the best single form of treatment of this disease. They further stated that, seen in its early stages, the disease is curable by this means, and that few cases did not receive some benefit. There have been numerous series of cases reported by American investigators, almost all of whom obtained good results in some of the cases. Few reported no success at all. Several deaths following chrysotherapy have been reported.

In the last published Review of Rheumatism and Arthritis, Cecil, of New York, states that chrysotherapy is an important advance[5]. He considers gold a dangerous agent, but says that in the hands of an experienced therapist it can be used with considerable benefit. The editors of this review

1. Moellgaard, H., in Proc. Roy. Soc. Med. 20:787, 1927.
2. Feldt, A.: Chemotherapeutische Versuche mit Gold, Klin. Wchnschr. 6:1136-9 (June 11) 1927.
3. Forestier, J.: Rheumatoid Arthritis and Its Treatment by Gold Salts; Results of 6 Years' Experience, J. Lab. & Clin. Med. 20:827-40 (May) 1935.
4. Hartfall, S. J., et al: (a) Gold Therapy of Rheumatoid Arthritis, Lancet 2:8-11 (July 6) 1935; (b) Further Observations on Gold Treatment of Rheumatoid Arthritis, Lancet 1:1459-62 (June 27) 1936; (c) Gold Treatment of Arthritis; Review of 900 Cases, Lancet 2:784 (Oct. 2) 1937; (d) Treatment of Rheumatoid Arthritis With New Gold Salt, Lancet 2:1410-12 (Dec. 17) 1938.
5. Cecil, R. L. in Hench, P. S. and others: Review of American and English Literature on Arthritis for 1940, Ann. Int. Med. 15:1002-1108 (Dec.) 1941.

feel that no final evaluation of chrysotherapy is yet possible, but state that it has a better chance of survival than either vaccine or sulfur therapy.

In a recent personal interview with Dr. M. H. Dawson and Dr. Ralph Boots of the Arthritis Clinic at the Presbyterian Hospital of the Columbia Medical Center in New York, I was advised that at their clinic, as soon as the diagnosis of rheumatoid arthritis is made, gold therapy is started. They plan to report on their results in a series of 440 cases soon, and are extremely enthusiastic about the use of gold. Dr. Dawson states that no other agent has produced results such as he has seen in these cases.

The manner of action of gold in arthritis is not known. It is excreted through the kidneys and intestinal tract and possibly through the bronchial mucosa. Nephritis has been produced experimentally in rabbits by the injection of large amounts. Apparently excretion is slow, and there is a tendency for it to accumulate in the spleen, liver, and possibly the lungs. This cumulative effect may have accounted for some of the severe reactions which have occurred in some clinics.

Certainly there can be no doubt as to the toxicity of gold compounds. The commonest reactions which may occur are those in the skin, the gastro-intestinal tract, the kidneys, the liver, the respiratory tract, the blood system, the nervous system, the mucous membranes, and the ocular and articular systems. These reactions have all been described in the literature.

The selection of a suitable preparation for use among the many that are available offers something of a problem. Myochrysin (sodium aurothiomalate) was the first preparation used, and was given intramuscularly. Nearly all the patients upon whom this preparation was used showed some form of reaction ranging from a simple conjunctivitis immediately following injection to a definite skin eruption, papular in type, with an albuminuria. Sodium gold thiosulfate (Chrysalbin) is a preparation we now use intravenously. It has produced some reactions—one with marked gastro-intestinal, skin, and bronchial manifestations. There are many other salts which have been used, including Solganol A (aurothioglucose), an intravenous preparation. Solganol B is used intramuscularly. Colloidal gold is apparently ineffective therapeutically and is not used in any of the clinics to our knowledge.

Since 1939 we have used gold salts in the treatment of 32 cases of chronic rheumatoid arthritis. Gold is not a cure-all in this condition, and we do not rely upon it solely for treatment. There is no substitute for an adequate medical study of the patient. The correction of any deficiency, whether it be an achlorhydria, anemia, avitaminosis, or endocrine disorder is essential. Certainly any active focus of infection should be removed, whether or not it has a direct influence on the disease. Rest, adequate diet, physical therapy, correction of postural defects, and orthopedic care are fundamental to all treatment. Psychotherapy has its own particular role in the treatment of the disease.

Our present routine is to hospitalize all patients receiving gold therapy. Platelet counts, hemoglobin determinations, red and white cell counts, sedimentation rates and urinalyses are done at weekly intervals, in addition to a thorough routine medical study. A decrease in the platelet count to less than 100,000 has been reported to portend dangerous complications during therapy. We have continued gold therapy with the count as low as 120,000. An increase in the sedimentation rate during the administration of gold is generally considered a contraindication to its continuance. We expect to obtain a slow but steady decrease in the sedimentation rate. We do not like to give gold when the patient's red cell count is under 4,000,000. We prefer to build the blood to higher levels before beginning treatment. The development of a leukopenia or neutropenia and casts or red cells in the urine are indications to cease treatment until these have cleared. Naturally, gold therapy is not attempted if there are clinical signs or a history of renal or hepatic disease, diabetes, nephritis, allergy, or tendency to hemorrhage.

Practically all patients receive injections of liver and liver and iron by mouth, as well as adequate vitamin therapy, during treatment. The intravenous injections of gold salt are given every other day. The initial dose is .01 Gm. and the amount is increased by .01 Gm. at each injection until a full ampule, or .05 Gm., is being given. Twenty such injections of .05 Gm. constitute a course, following which there is a rest period of from six to eight weeks. Then a second course is given in the same manner. Usually from two

to four courses are required to arrest the process completely, but clinical evidence of improvement is frequently apparent early in the first course of treatment.

In the 32 cases treated we have tried to classify the results as good, fair, or poor, and have indicated reactions which occurred. Classification of results is difficult. For instance, improvement in a patient with multiple ankylosed joints, so crippled that working is difficult and that he must be helped in rising or even eating, is a relative matter. Yet, if this patient can be relieved of pain and can sleep without sedatives, and if we can reduce the soft tissue swelling and redness about the joints and obtain some improvement in motion, then I think we are entitled to say that the result is fair, possibly even good.

The ages of the 32 patients treated ranged from 16 to 65, and there were 21 females and 11 males. One patient had Struempell-Marie spondylitis, 3 had Struempell-Marie spondylitis with involvement of the other joints, and in 28 cases there was involvement of multiple joints other than the spine. We considered the results good in 15 cases, fair in 14, and poor in 3 cases. In these 3 cases therapy had to be discontinued because of the reactions produced.

We had reactions in 11 cases. There were no cases with jaundice or involvement of the nervous system, and the skin eruptions which occurred never progressed to the exfoliative stage. There were no cases of purpura or agranulocytic angina. Of the 11 patients who developed reactions, 1 had a hematuria; 4 had severe skin eruptions varying from a diffuse erythema such as is seen in scarlet fever to a papular eruption accompanied by marked bronchial irritation and nausea; and 6 had relatively mild skin reactions, conjunctivitis, or slight mucous membrane irritation. One patient who had associated psoriasis noted a definite improvement in the skin disease during gold therapy. Almost all patients complained of some joint pain or increase in pain early in the course of treatment.

Many of the patients in whom good results were obtained are back at their usual occupations. In some instances there has been complete disappearance of swelling, pain, and redness; in fact, in several cases, it would be impossible to tell that there had been any previous joint disturbance. Where actual bony change had occurred, with partial or complete ankylosis, the swelling and pain disappeared and there was frequently improvement in function. Complete restoration in such cases cannot be hoped for, however.

Some of these cases with results classified as fair did not have more than one course of gold and possibly should not be included in the report. As has been previously stated, all patients with poor results had some type of reaction, requiring the discontinuance of gold therapy.

Summary

In an experience of 32 cases of rheumatoid arthritis treated with gold, our impressions of such therapy have been as follows:

1. The earlier the treatment is started, the greater is the likelihood of an excellent result or even an arrest of the disease.

2. Some improvement may be expected in cases of long duration, but where actual joint destruction has occurred, one cannot expect to create a new articulation.

3. The results in the Struempell-Marie or spondylitis cases are not especially outstanding, since most of these cases have marked joint disturbance and ankylosis before treatment is instituted.

4. Reactions are not necessarily an indication for complete cessation of therapy, but a warning that treatment should be stopped for the time being. It may be resumed later unless there is some more definite contraindication.

5. Gold therapy is contraindicated where there is a history or clinical evidence of cardiorenal or hepatic disease, diabetes mellitus, allergy or hemorrhagic tendency.

6. Careful selection of cases and careful study and observation during treatment will prevent many of the undesirable reactions.

7. Longer periods of observation are required to determine the permanency of the results.

Pulmonary tuberculosis should always be in the mind of the physician when a patient complains of chronic hoarseness or sore throat. The chief misleading factor in the diagnosis is the apparent well being of the patients whose latent pulmonary and systemic signs were masked by laryngeal symptoms. Jos. C. Donnelly, M.D., Jour. of Amer. Med. Assn., Oct. 31, 1942.

PSYCHOANALYTIC TREATMENT

IGNACIO MATTE BLANCO, M. D.
DURHAM

Psychoanalysis started as a method of investigation and treatment of mental disorders, and these aspects of it remain to the present day among its most important ones. In this short paper I shall not attempt to give a summary of what psychoanalysis is, but will concentrate on some points which may be useful to dispel some of the innumerable misconceptions prevalent, not only among the general public, but also, very frequently, among the medical profession.

The Technique Employed in Psychoanalysis

The fundamental method employed in analytic treatment has been called the technique of "free association". The barest essentials of it can be described as follows: Usually the patient is asked to lie down on a couch, so that he may "relax" more completely and thus concentrate on his thoughts. If he finds great difficulty in complying with this requirement, there are times when it may well be omitted. The patient is asked to tell the therapist everything that comes to his mind, irrespective of whether it appears coherent or not, whether it is important or trivial, intimate or impersonal. Even details which apparently bear no relation to the patient's illness, and may be embarrassing to mention—such as remarks about the appearance of the physician's consulting room, the clothes he wears, the pleasant or unpleasant expression of his face—are of interest. In short the analyst attempts to follow in so far as is possible all the width and depth, vicissitudes and variations of the patient's stream of thought. (Incidentally the silences are just as important as the utterances, and we frequently see that in the beginning patients have difficulties in "free associating".) We may ask what is the purpose of such a roundabout procedure. Paradoxically enough, this method turns out to be the shortest route to the core of the patient's problems, while it also allows the therapist to work at the level of the emotions rather than at the level of intellectual discussion of problems. In this respect psychoanalysis differs more widely from all other forms of psychotherapy, and herein lies one of the secrets of its greater power in many cases.

Behind the technique of free association lies an assumption which is proven over and again in analytic practice. The stream of thought does not follow an arbitrary course, but is on the contrary intimately dependent on the emotional life. In the thoughts that come to the patient's mind it is possible to detect, if one is skilful enough, signs of his innermost emotions, be they wishes, loves, angers, fears, disappointments, hopes, or discouragements. As mental illness is always intimately connected with the patient's emotions, the analyst can, if he knows how to see clear in the midst of an apparent muddle, soon reach and grasp all the threads of the leading emotions which have interwoven to form a disease process.

Furthermore, by this method the therapist will be dealing neither with the past of the patient, nor with his present, as an outsider, but from an inner vantage point; he is thus in an ideal position to modify the emotions which are at the basis of his troubles. Most other methods of psychotherapy discuss the patient's problems from the outside: both the doctor and the patient are spectators of the illness. But, contrary to what many psychiatrists believe, *understanding alone has no power to modify a neurosis or a psychosis.* The emotions that go with understanding are of equal or greater importance; and in the psychoanalytical method we are always dealing not only with thoughts but with feelings at the moment of their appearance.

The analyst not only follows what the patient tells, but carefully observes his actions, as these may also have a meaning.

A few cases may illustrate these points. Due to limitations of space these reports are bound to be incomplete and schematic to the point of distortion, and I beg the reader's indulgence.

A patient came to consult me because of extreme shyness which had led him into almost complete isolation. Furthermore, he had a feeling of unhappiness, and experienced difficulties in reading and studying. He was both intelligent and cultured, but was unable to tell with precision what these various difficulties were about, although he

From the Department of Neuropsychiatry, Duke University School of Medicine, Durham.

Based on a talk made before the Section on the Practice of Medicine, Medical Society of the State of North Carolina, Charlotte, May 12, 1942.

had more than one inkling of their meaning. He could not overcome them, however.

We started treatment. After a few meetings I noticed that he looked at his watch after only a few minutes had passed. I asked him about this action, and he was unable to tell why he did so, remarking that he was in no hurry. This behavior was repeated at practically every session. Gradually the patient became increasingly silent, and repeatedly told me that nothing came to his mind. I suspected that he was frightened, and that looking at the watch was an expression of his desire to leave. When I suggested this interpretation he denied it, explaining that he felt no fear. He not only continued to look at the watch, but I also noticed that instead of quietly lying on the couch, he began to put one foot on the floor, placing himself in a position from which he could jump up whenever he so desired. In subsequent sessions he was unable to lie down at all and sat up. Then he told me that it was no use to go on. I concluded that his fear of being with me had increased, but had as yet no signs as to what this fear might be about.

All this time he was speaking very little. A new action made its appearance during the sessions. He began to hit against the wall, at first rather timidly, but as weeks passed on, very violently, almost hurting his knuckles. I gathered that this was a means of expressing some form of aggression which he did not dare to express more directly. Gradually I became aware that both his thoughts and whatever small actions he performed, all pointed towards his being afraid of the treatment, and his having some aggression which he was inhibiting. I seized every opportunity to point that out, at first without much apparent success. His aggressive fantasies became more clear and his fear also increased. At this stage he not only had difficulty in lying on the couch, but developed a new little activity: he began to play with the handle of the door. I interpreted that as a sign that he wanted to be sure that the door could be opened whenever he wished.

The anger and the fear showed themselves in increasingly obvious actions; interestingly, the patient still did not *feel* either emotion. By then he not only played with the handle but left the door ajar, until a moment came, weeks later, when we had our sessions with the door full open. Clear fantasies of flight made their appearance: he imagined himself leaving the room like a hurricane, piercing walls, and disappearing in the distance at an astronomical speed. His aggression also became more open, and on one occasion in the midst of overwhelming feeling he told me in interrupted phrases and with the greatest difficulty that he had just thought of the last scene of "Othello".

Thus far I have described his fear of being with me in the room. But of course he had only recently met me, and it would not be reasonable to think that a harmless therapist would be the real cause of his fears. Together with the appearance and ever clearer manifestation of such strong emotions, memories of the past seemed to "pop up", as though coming from nowhere. One day he told me of the memory of an incident with his mother (when he was a child), when he had felt very angry with her and thought she had treated him unfairly. Another day an apparently irrelevant memory came to his mind, about some deep feelings which he had had many years previously one evening in the country. Then came a little incident of childhood, and the story of his curiosity about his mother, and the guilt about this curiosity; also the feelings about his father. And so on the memories flowed one by one. Each time a memory made its appearance we were able to see the relations between his state of mind during the session and the emotions which seemed implicit in the incident related. Thus we gradually disentangled and reconstructed step by step a long and complicated story in which we recaptured the delicate interweaving of events and feelings: how he had felt slighted, misunderstood, and treated in an unsatisfactory manner. We also saw his angers in connection with such experiences, his intimate feelings of love and shyness about expressing them, the rivalries, loves and hates in connection with the important figures of his past. *Gradually the patient relived his past in the analytic situation*, but this time the emotions were not nipped in the bud or in any way suppressed; the patient was given a chance to live them to a full extent and correspondingly deal with them more satisfactorily. It turned out that his various present day symptoms were the resultant of the variety of his emotions and the inadequate means of dealing with them—inadequate because he could do no better in the circum-

stances. A gradual re-adaptation occurred and the patient began to improve.

Another patient came to consult me because of homosexuality. He had practiced both heterosexuality and homosexuality, and was anxious to get rid of this latter. In the course of the treatment he developed a passion for a man whom the therapist happened to know. This man had some vague physical resemblance to the therapist, and furthermore had the characteristic in common of speaking the same language; this, together with various other details, clearly indicated that this homosexual attachment was a substitute for a more direct attachment to the therapist. It was not the therapist's business to experience shock at being the object of a homosexual attraction, but to try to see what there was in it in order to help the patient. He interpreted what he saw, and the patient immediately protested that he felt no physical attraction for the therapist at all. As treatment progressed the analyst became in the eyes of the patient more and more of a tyrant, a difficult person who was unwilling to help him—in fact, was carefully keeping his therapeutic power away from him. With his "reason" the patient saw that this feeling was really unwarranted, but he could not help it. Then came memories of his having felt that his father had a similar attitude. Gradually he began to express more aggression towards the analyst. At first this aggression was very much disguised, and for some time it was almost exclusively manifested by a peculiar symptom: anything the analyst said would provoke laughter in the patient. A moment came when as soon as the analyst gave signs of speaking, before he had time actually to utter a word, the patient would be seized by a convulsion of laughter. The patient realized that this was an unusual, apparently inadequate reaction, but could not help it.

But he also began to give signs of identification with the analyst. He wanted to inspect his books and felt guilty about it, feeling that it amounted to robbing him of his knowledge. On one occasion when he was shown into the office while the physician was not there, he sat in his chair, feeling both relish and defiance, but at the same time, guilt. In fantasy he became the physician. It was hard for him to "confess" what he had done. At that session memories came to his mind about having sat in his father's favorite chair, and played the role of head of the family when his father was away.

Later on he met the physician's wife, and passed some remarks about her breasts. Shortly afterwards he spoke of a violent attraction for a woman, and described her breasts in exactly the same manner. At a subsequent occasion he met the physician and his wife at a party. Shortly after they left the party the patient developed a violent homosexual attraction for a man he happened to see. Gradually, by innumerable signs, we were able to reconstruct the situation and see that his so-called homosexuality was at heart a feeling of inadequacy to deal with women, and a desire to rob his father of his strength, in order to become more potent; there was also a direct feeling of rivalry with him. To cope with all these feelings he played the submissive homosexual role, in this way hoping to avoid revenge; thus, at the party he developed a homosexual attraction after having felt attraction for his physician's wife. It amounted to saying: "Don't be angry with me; I am not trying to snatch your wife away, because I am a homosexual." As these various emotions were played in connection with the analyst, and in the course of the treatment were related to a variety of incidents of his past life, the patient became less frightened, more sure of himself, and gradually witnessed a dissolution of his homosexual tendencies.

A third case was that of a girl who came to consult me about a variety of obsessions and compulsions. She was afraid of being left alone in a room, afraid of not having control over various things. It was a problem for her to have a permanent wave, because she knew that she could not undo it even if she wanted to. If she put a coin in the collection box of a bus she felt great tension, because, however much she tried, she would never be able to find and recognize that coin among the many others.

In the course of the treatment it turned out that she had a most submissive attitude, and that she was always suppressing her own feelings. If she wanted to go somewhere and somebody told her not to do so, she would obey; she explained this obedience as "being good". But it turned out that "goodness" understood along those lines completely paralyzed her activities, and in fact threw her into sickness. In the course of the treatment we were able to find that the

real cause of this attitude was not a freely felt, freely decided desire for perfection. She was in fact trying to suppress a great deal of anger aroused by the domineering attitude of both parents, a domineering attitude which was all the more disturbing as it was subtle. The parents did not order her, but gave her to understand what they expected of her. The therapist played the part of what could be called a subsidiary parent, and gradually enabled her to reach a more serene attitude. It turned out that her obsessive-compulsive behavior was in one sense a *reductio ad absurdum* of the parents' attitude: it was an indirect way of telling them how cruel they were. The patient was not aware of this, but nevertheless felt guilty; the compulsive behavior was also in this respect a form of self-punishment for her anger. The benevolent attitude of the therapist reassured her fears, and she gradually became freer of symptoms. Although she became more independent, in no way did she become defiant of her parents, which was one of the things she feared. She loved them, but this time in a more objective manner, and did not feel forced to close her eyes to their limitations.

Let us very briefly review some aspects of the psychoanalytical technique implicit in the description of these cases.

1. An important aspect of the treatment is *interpretation.* The analyst tries to understand the meaning of the patient's words and activities, and communicates his interpretation to him. Underlying this method is the knowledge that a patient may have a thought process about which he himself knows nothing, and perform an activity whose meaning he ignores—in other words, the existence of the *unconscious.* Interpretation, among other things, calls attention to the unconscious processes, *and it must always be based on actual evidence furnished by the patient's talk or behavior.* Unfortunately we do not have more space here to discuss at length this very important subject.

2. Interpretation does not necessarily act by suggestion or persuasion, and does not necessarily aim at convincing the patient, although naturally some measure of conviction is always achieved eventually. But it often does not matter whether the patient agrees or not, because one important mechanism by which interpretation acts is reduction of anxiety, which permits changes in thinking or behavior. The first patient became less frightened of his aggression, and this was thus permitted to come more to the fore and eventually be dealt with by better methods which represented less expenditure of energy than those hitherto employed. The same process occurred in the second case. The third patient was helped by interpretation to dare to exert herself more, because she became aware of how much she crushed her own wishes. Here the doctor's benevolent attitude represented moral backing as well as reassurance. It can be said that it is not interpretation itself that works, but interpretation coupled with an understanding and benevolent attitude on the part of the therapist. There are moments in analysis when this latter factor suffices, but there are others when interpretation must be added.

3. Contrary to what is frequently said, the analytical treatment does not deal with the past, but with the present, as I have endeavored to show in the case reports. But it manages *to get the past inserted into the present in such a way that it becomes the present.* The second case illustrated this point clearly. When the patient sat in my chair, in a way he also sat in his father's chair, and so the past attitude was expressed in the present. It would be artificial to separate one from the other, and the patient's attitude toward the therapist could not be understood without understanding his attitude toward his father (or in other cases, toward one or many other persons of the early environment). In short we were dealing with a present moment which in itself showed the past in action.

Much as I would like to, I cannot enter into other aspects. I shall mention, however, one further point. Psychoanalysis, it is said, deals only with sex. Nothing is further from the truth. There is no human emotion of any kind that is excluded from an analytical treatment, from the highest manifestations of love and altruism to the humble signs of the self-preservative or sexual instinct. It is true, however, that sex appears as a frequent subject in psychoanalytical treatment, but so it does in ordinary life. A well adapted psychoanalyst should not be moved by a curiosity, springing from inner conflicts, to seek vicarious satisfactions by harping unnecessarily on sex. It is quite possible to discuss frankly sexual problems, even with

people who are excessively modest. It is all a question of attitude.

In order to make this discussion complete it would be necessary to enter in greater detail into the so-called sexual etiology of the neuroses. This would require a long consideration of the problem of symbolism and that of the utilization of the sexual instinct, together with the self-preservative instinct, for the highest human activities.

Duration of Treatment

The psychoanalytical method may be employed for therapy lasting from one hour to many years, all dependent on the case and the results desired. I feel that the psychoanalytical method is very often as rapid or more rapid than other methods of psychotherapy if one considers equality of achievements. But usually psychoanalysis aims at higher and more fundamental results than all other forms of psychotherapy, and naturally these cannot be obtained so quickly. To my knowledge only psychoanalysis attempts to effect substantial changes in the character of the person, and such a type of treatment naturally may take years. But I may cite from personal experience the case of a child in which considerable improvement in chronic difficulties was effected after only two sessions.

The Psychoanalyst

The psychoanalytical treatment requires a skill which can be acquired only by training. The International Society of Psychoanalysis demands several years of special training, in which, among other things, the candidate has to be submitted to a minimum of two years of psychoanalysis himself. The purpose of this is to help him to obtain as much understanding of his own difficulties as possible, and thus to minimize the risk of his playing out his own anxieties on his patients.

The instrument the analyst employs—the knife of his surgery—is the very delicate instrument of his own personality, with which he understands the patient and influences him. Therefore the results he obtains will depend not only on his training but also on his personality. Though there are some basic results which should be achieved by any well trained analyst, it is often said that each analyst does better with some cases than with others. Incidentally, the same can be applied to other methods of psychotherapy, and although I am of the opinion that psychoanalysis is superior to all other methods, I can well imagine that a gifted individual practicing other psychotherapy can obtain better results than a not so gifted analyst.

Indications

The technique of treatment varies according to the type of case treated. Following is a list of some conditions that can be treated by psychoanalysis:

Hysteria: From personal experience I feel that, so far as modification of symptoms is concerned, one can get equally good results by other methods. There may be cases, however, when a patient is reluctant to give up a symptom because it serves a certain purpose which cannot be easily done away with. In such cases a few interpretative sessions may do a better job than hypnosis. In other cases it may be just the opposite. Personally, I feel that the modification of the hysteric personality is a very difficult task, and very often I would prefer not to attempt it, but rather to help the patient develop in a favorable environment.

Obsessional neurosis and obsessional character: Psychoanalysis is the method of choice. The results are in my experience quite good. Sometimes a long treatment may be required, especially in long standing cases.

Anxiety states (anxiety neurosis or anxiety hysteria): In this group one may get good results with other treatments, but psychoanalysis is indicated just as well, especially in those difficult cases where other methods have failed.

Character difficulties of various kinds, depressive personalities: Prolonged analysis may be successful in some cases. But when we are confronted with poor assets and serious environmental difficulties we may get poor results.

Sexual difficulties and perversions: Here we may include impotence, frigidity, homosexuality, fetishism, and other perversions. Psychoanalysis may obtain very good results in such cases, although of course there may be unfavorable cases. I believe the analytic treatment is the only successful therapy in some of these cases.

The psychoses: A great deal of research is

being done at present in the psychoanalytic treatment of psychoses. My impression of results is as follows:

Psychoanalysis in "slowed up" depressions is not worth attempting; they respond very well to electric shock treatment. In some patients with repeated depressive episodes, it would be advisable to attempt psychoanalytic treatment during the intervals.

Manic excitement: I use a modified analytical approach in some cases, but in most of them I prefer other methods. As in depression, treatment during the intervals may be attempted.

Acute schizophrenia responds well to various other methods. In my experience one can get dramatic results by means of interpretation, but I am doubtful that one can shorten the duration.

Chronic schizophrenia with deterioration seems a hopeless condition. There may be other cases of chronic schizophrenia in which prolonged treatment may give results.

Schizoid personalities can and should be treated by the psychoanalytical method, and I do not believe there is any other method that really can get results in these patients. I cannot say that psychoanalysis works in all cases, but it can certainly help, and considerably change some patients, especially gifted persons.

The so-called *toxic and organic psychoses* of course are not amenable to psychoanalytic treatment.

Alcoholism and drug addictions can be treated by psychoanalysis. The results depend to a great extent on the case.

A number of *psychosomatic conditions* can also be treated by the analytic method. I may mention here some cases of bronchial asthma, colitis, constipation, and neurodermatitis.

A variety of *behavior disorders and disturbances of psychogenic origin in children* can be brilliantly solved by the technique of play analysis. Among these can be mentioned bed wetting, temper tantrums, pavor nocturnus, excessive masturbation, school difficulties, and excessive aggression or meekness.

There is at present a great deal of research work being done regarding the treatment of *psychopathic personalities and delinquents.* The results are very encouraging in some cases.

Finally, there are a variety of other conditions which are difficult to enclose in any psychiatric frame, and which are nevertheless understood and modified by analysis. Among these we may mention some paranoid states and transitory disorders (such as a sudden onset of suicidal tendencies in a crisis) seen in young people.

RECENT STUDIES ON BIOTIN

W. H. FISHMAN, PH.D.

WINSTON-SALEM

The story of biotin, a member of the vitamin B complex, is the story of three separate investigations, none of which had any visible connection with the others. One was the study of a factor whose presence is essential for the proper growth of yeast. This factor was named Bios II*b*. Another study concerned a factor which stimulates the respiration and growth of a root nodule bacterium, "Rhizobium". This factor was known as coenzyme R. The third was an investigation of a substance, "vitamin H", which prevents and cures the harmful effects of egg-white on animals. Bios II*b*, the yeast growth factor; coenzyme R, the factor necessary for growth and respiration of Rhizobium; and vitamin H, the anti-egg-white injury factor, have been clearly shown to be one and the same compound[1], now known as biotin.

Egg-White Injury

The syndrome of egg-white injury, occurring in rats fed substantial amounts of dried egg-white, was first reported by Boas[2] in 1927. In these animals, after three weeks on such a diet, typical symptoms are seen. Some of the more striking ones, as described by Boas, are reproduced here:

First "red scaly patches appear at the corners of the mouth, the coat becomes rough and sticky and the long hairs fall out. The fur on the abdomen shows at first a characteristic ribbed appearance, followed by the development of bald areas. Meanwhile the

From the Department of Biochemistry, Bowman Gray School of Medicine of Wake Forest College, Winston-Salem, N. C.
Presented before the Journal Club, January 18, 1943.

1. du Vigneaud, V., Melville, D. B., Gyoergy, P., and Rose, C. S.: On Identity of Vitamin H With Biotin, Science *92:62-3 (July 19) 1940.*
2. Boas, M. A.: Effect of Desiccation Upon Nutritive Properties of Egg-White, Biochem. J. 21:712-24, 1927.

red patches spread to other parts of the body and the picture is one of an eczematous dermatitis. There are even skin hemorrhages in severe cases. The region around the mouth is always the most severely affected though there is often such marked blepharitis that the eyes are closed. . . . To the dermatitis, symptoms of nervous upset are now added. There is pronounced spasticity of the limbs, particularly of the hind legs, and the back is arched. . . . Death, which occurs in the final phase, is preceded by a rapid loss of weight, and the animal shows signs of extreme cyanosis. Rigor mortis sets in rapidly."

The first theory advanced to explain this syndrome was simply that drying fresh egg-white either produced a toxic substance or destroyed an essential factor. It was soon clear, however, that the drying of egg-white had nothing whatsoever to do with the results, inasmuch as fresh white-of-egg could likewise produce these symptoms.

This syndrome could be prevented and cured by the inclusion in the diet of a factor present in large amounts in raw potatoes, liver, milk and yeast. From some of these sources the active anti-egg-white injury factor, biotin, was first isolated in chemically pure form by Koegl and Toennis[3] in 1936, and in 1940 by du Vigneaud and his co-workers[4]. The full chemical structure of biotin has only recently been announced by du Vigneaud *et al*[5].

The mechanism by which some factor in the white-of-egg causes a deficiency of this vitamin, "biotin", in tissues of the rat has now been satisfactorily explained. It appears that there is a protein, "avidin", in egg-white which unites in the intestinal tract with the biotin. This combination is not absorbed by the body but is excreted through the feces. In this way, a deficiency of the biotin may be produced.

Most of the experimental evidence in support of this hypothesis has been presented by R. J. Williams and his associates[6]. These investigators found that, when egg-white was added to a medium which was adequate for the growth of yeast, yeast growth was no longer possible. However, if the medium (unsuitable for growth) were hydrolyzed, yeast growth was good. Here it appeared that the biotin had somehow formed a stable compound with egg-white, so that only hydrolysis could liberate the biotin, thus stimulating the growth of yeast. Next, it was shown that the biotin content of the feces increased when egg-white was administered in the diet, while the tissue stores became depleted. This was evidence for the accelerated excretion of biotin, presumably in association with some factor in egg-white. Finally, these same workers obtained a crystalline protein-like compound from egg-white, possessing all the properties of the factor which produces the syndrome. Williams has named the egg-white injury factor "avidin" to indicate its avidity for biotin.

It would appear, therefore, that the syndrome produced in the rat by egg-white is an induced biotin deficiency. Du Vigneaud at Cornell has fed diets very low in biotin to rats, even into the third generation, without obtaining the typical signs of biotin deficiency. The explanation for this phenomenon seems to lie in the ability of the intestinal flora of the rat to synthesize biotin. However, in the chick, the lack of biotin in the diet produces typical changes.

Biotin Deficiency in Man

A biotin-deficiency state has been demonstrated in man by Sydenstricker *et al*[7]. Four volunteers ate a diet containing dessicated egg white, in amounts designed to supply 30 per cent of the total caloric intake, and a minimal amount of biotin. Some of their observations are reproduced here: "During the seventh and eighth weeks, all showed a pronounced grayish pallor of the skin and mucous membranes . . . (and) atrophy of the lingual papillae . . . During the ninth and tenth weeks all subjects showed increasing dryness of the skin with marked reticulation and a fine branny desquamation.

3. Koegl, F. and Toennis, B.: Plant Growth Substances II Bios Problem—The Isolation of Crystalline Biotin From Egg Yolk, Ztschr. f. physiol. Chem. 242:43, 1936.
4. du Vigneaud, V., Hofmann, K., Melville, D. B., and Gyoergy, P.: Isolation of Biotin (Vitamin H) From Liver, J. Biol. Chem. 140:643-51 (Aug.) 1941.
5. (a) du Vigneaud, V.: The Structure of Biotin, Science 96: 455-61 (Nov.) 1942.
   (b) du Vigneaud, V., and others: The Structure of Biotin: A Study of Desthiobiotin, J. Biol. Chem. 146:475 (Dec.) 1942.
   (c) Melville, D. B., Moyer, A. W., Hofmann, K., and du Vigneaud, V.: The Structure of Biotin: The Formation of Thiophenevaleric Acid From Biotin, J. Biol. Chem. 146:487 (Dec.) 1942.
6. Eakin, R. E., Snell, E. E., and Williams, R. J.: (a) Concentration and Assay of Avidin, Injury-Producing Protein in Raw Egg White, J. Biol. Chem. 140:535-43 (Aug.) 1941; (b) A Constituent of Raw Egg White Capable of Inactivating Biotin in Vitro, J. Biol. Chem. 136:801 (Dec.) 1940.
7. Sydenstricker, V. P., and others: Preliminary Observations on "Egg-White Injury" in Man and Its Cure With a Biotin Concentrate, Science 95:176-7 (Feb. 13) 1942.

"After the fifth week the symptoms . . . were strikingly like those noted in experimental thiamin deficiency. Mild depression progressed to extreme lassitude, somnolence and in two instances a mild panic state. Muscle pains, hyperesthesia without demonstrable neurologic changes and localized paresthesias were complained of by all. After the tenth week patients complained of precordial distress and showed definite electrocardiographic changes." The excretion of biotin in the urine was reduced to one-tenth of that excreted by individuals taking a normal diet. When biotin was administered parenterally all the symptoms disappeared and the subjects returned to good health. The biotin content of the urine rose to normal. It is clear from this work that a biotin deficiency state can be produced in man and that biotin can correct this deficiency state.

In December, 1942, there appeared a rather complete study of biotin metabolism in man, showing that the excretion of biotin varies in the same direction as the amount of biotin in the diet[8]. However, since the average daily biotin content of the feces greatly exceeded the amounts present in the diet, it was deduced that in the human being a good deal of biotin is synthesized by the intestinal flora. In fact, it is believed that the quantity of biotin provided by this source may be adequate for the needs of man, and there is thus reason to doubt that human subjects can be made deficient simply by the lack of biotin in the diet. In a group of 60 patients suffering from malignant disease, blood disorders and endocrine conditions the biotin values were not found to be abnormally low; however, the assay method employed by this investigator measures urinary substances, other than biotin, which stimulate yeast growth. Hence the values reported may be too high.

The Role of Biotin in Cancer

Hepatic cirrhosis and cancer may be produced in rats by the daily oral administration of the chemical, "dimethyl-amino-azobenzene" or, as it is more commonly known, "butter yellow." Kensler and his associates at Memorial Hospital in New York have shown that these lesions can be almost completely prevented by the addition of casein and riboflavin to the diet[9]. This prophylactic effect, though marked, was not as complete as that obtained by supplements of dried liver or yeast. Du Vigneaud reasoned, therefore, that vitamins other than riboflavin should be investigated for their protective action. To his surprise, he found that the addition of biotin to the diets of rats fed riboflavin and casein while receiving the carcinogenic substance, "butter yellow," instead of reducing still further the incidence of hepatic tumors, appeared to increase considerably the number of cancerous animals[10]. Whereas there were no tumors in 19 control rats on the carcinogenic diet protected with casein and riboflavin, 9 out of 16 rats on this diet, supplemented with 2 to 4 gamma of crystalline biotin daily, developed tumors. This experimental fact has thus far not been adequately explained.

However, an interesting hypothesis which has attracted a great deal of attention proposes that malignant cells have an excessive requirement of biotin for their metabolism, inasmuch as biotin is one of the most active growth promoting substances known. Accordingly, the creation of a biotin deficiency —say, by feeding egg-white—might lead to the regression of cancers by reducing the concentration of the growth promoting biotin.

Experimental study of this hypothesis has developed along two lines. In the first, biotin deficient mice were inoculated with fragments of sarcomas to determine whether the tumors would grow. Contrary to expectations, it was found that tumors did grow in the tissues that were presumably low in biotin. In the second, analyses of the biotin content of cancerous and non-cancerous tissues have been made with the expectation that cancerous tissues would be biotin-rich. In the experiments of one investigator a number of tumors have been shown to be richer in biotin than were corresponding normal tissues, while another investigator found that none of the cancers could be classified as biotin-rich, although some appeared to be biotin-poor.

R. J. Williams[11] points out that "The

8. Oppel, T. W.: Studies of Biotin Metabolism in Man, Am. J. M. Sc. 204:856-75 (Dec.) 1942.

9. Kensler, C. J., and others: Partial Protection of Rats by Riboflavin With Casein Against Liver Cancer Caused by Dimethylaminoazobenzene, Science 93:308-10 (March 28) 1941.

10. du Vigneaud, V. and others: Procarcinogenic Effect of Biotin in Butter Yellow Tumor Formation, Science 95:174-76 (Feb. 13) 1942.

11. Pollack, Maxwell A., and others: B Vitamins in Cancerous Tissues; Biotin, Cancer Research 2:748-51 (Nov.) 1942.

finding that some tumors were richer, others poorer in biotin than the corresponding control tissues, may indicate one of at least three things: (a) that changes in biotin content are without special significance in regard to the cancerous transformation . . . (b) that there may be at least two different types of cancer metabolism, namely that which requires more and that which requires less biotin than the tissues of derivation . . . (c) that there may be one main type of metabolism common to all cancer, but that the biotin requirement may be more directly affected by some secondary aspect of the tissue such as that relating to its particular function in the non-cancerous, integrated organism."

The evidence opposed to the biotin cancer hypothesis resulting from these investigations has now become somewhat inconclusive as a result of some recent work. Burk and Winzler[12] have shown very clearly that yeast growth is obtained in normal tissues and urine by substances which, though chemically similar to biotin, do not possess vitamin H activity—that is, the ability to combine with avidin. This may account for the discrepancies in the analyses of the biotin content of cancerous and non-cancerous tissues, and we can draw no definite conclusions until data have been collected through the use of an analytical method which measures not only biotin but these other biotin-like substances. Moreover, there has been a recent report of a few instances in which regression of human cancer has been obtained in patients receiving large amounts of egg-white. So far, details of this study have not been published.

Summary

Biotin, a substance of known chemical constitution and a member of the vitamin B complex, thus far has three established functions: (1) a growth factor for yeast; (2) a growth factor and stimulant of respiration for Rhizobium; (3) a vitamin whose lack in the tissues of rat, chick, dog, monkey or man results in well defined clinical symptoms. There is present in egg-white a protein, "avidin", which has the property of combining with biotin so that biotin is rendered non-absorbable. A deficiency state can thus be readily produced by including avidin in the diet. In man, biotin is apparently synthesized by the intestinal flora, and ordinarily it seems that man will not acquire a biotin deficiency very easily. Biotin has the power of increasing the incidence of a "butter yellow" cancer in rats maintained on a protective diet.

12. Burk, D. and Winzler, R. J.: Heat-Labile Avidin-Uncombinable, Species-Specific and Other Vitamers of Biotin, Science 97:57-60 (Jan.) 1943.

TUBERCULOUS MENINGITIS IN CHILDREN

A Report of Forty Cases

RICHARD B. TUDOR, M. D.

DURHAM

Tuberculous meningitis has caused the death of forty children in the Pediatric Department of the Duke Hospital during the last twelve years. Although exact figures are not available, I believe that it is the most common type of meningitis seen in this locality.

A diagnosis of tuberculous meningitis was made either after autopsy, at which definite evidence of tuberculous infection of the meninges was found, or after x-ray examination of the lungs, spinal fluid examination and clinical evidence of the disease.

Thirty, or 76 per cent of our patients, were colored, and twenty-two, or 55 per cent, were males. All of the patients over the age of 6 years were females. Twenty-seven (67 per cent) of the children were under 3 years of age, twenty-one (52 per cent) were under 2 years and twelve (40 per cent) were under 1 year of age. The highest incidence of the disease, in these figures, would be in the first year. In this group, four of the children were 1 year of age, three were 6 months old, three were 7 months old, one was 8 months of age and one was 11 months of age.

The average duration of symptoms and signs of tuberculous meningitis in these forty children—that is, from the time they were first recognized until death—was 24.8 days, the extremes being 9 days in one child and 90 in another.

The history given in most cases was that of an insidious onset, with general malaise,

From the Department of Pediatrics, Duke University School of Medicine and Duke Hospital, Durham, North Carolina.

stupor and vomiting. A definite date for the beginning of the illness was very difficult to get, in most instances. The chief complaints were, in the order of frequency, general malaise (87 per cent), stupor (78 per cent), vomiting (78 per cent), fever (69 per cent), anorexia (65 per cent), nausea (65 per cent), convulsions (47 per cent) and a stiff neck (47 per cent). Every child except four was stuporous upon admission. This is the most important single diagnostic sign, and is almost conclusive when coupled with the history of a gradual onset of symptoms. The past history is often very helpful in making the diagnosis. We obtained a definite history of tuberculous contact in twenty-five, or 72 per cent, of the children. In the last four years a definite history of contact has been obtained in all but two of the children. In most cases one member of the child's immediate family had active tuberculosis.

On physical examination, practically all of the children had some fever, usually low grade. One 3 year old colored female, however, had a temperature of 40.2 C. on admission. Reflexes were almost always hyperactive, and a stiff neck and positive Kernig and Brudzinski signs occurred in almost every child. Intracutaneous tuberculin tests were positive in twenty-two children, and negative in eleven. Five children died before the test could be read and in two a tuberculin test was not done. Dilutions of 1:1,000 old tuberculin were used in most cases. Rales were heard in only eight of the children. Nine of the children had a generalized lymphadenopathy.

As we believe that a lumbar puncture should be done on every child admitted with the slightest suspicion of a stiff neck or positive Kernig's sign, immediate lumbar puncture was performed on most of these children, and helped materially with the final diagnosis. The cell counts ranged from 42 to 590, the percentages of mononuclears varying from 30 per cent to 100 per cent. The spinal fluid globulin was increased in all cases, ranging from a trace to four plus. In ten examinations it was three or four plus. The spinal fluid sugar was fairly low in all but one case. In this case it was 56 mg. per 100 cc. In twenty-two cases a pellicle formed in the spinal fluid. The spinal fluids were clear in all but two children. In only three cases were acid fast organisms found in the stomach washings, and in five cases guinea pigs inoculated with the spinal fluid were found to have tuberculosis six weeks after inoculation. In these forty cases of tuberculous meningitis, then, the typical spinal fluid was clear; it formed a pellicle, contained about 280 cells, most of which were mononuclears, gave a two to three plus reaction for globulin, contained much less sugar than normal, and did not contain acid fast organisms on direct smear.

X-ray examination of the chest reveals pathology more frequently than physical examination would indicate. Chest x-rays were made on thirty-four of these children and revealed tuberculosis in twenty-three of them, normal chests in seven, pneumonia in one, and enlarged paratracheal lymph nodes at both hila in one. Two plates were too hazy to read. In fifteen of the children diagnosis of miliary tuberculosis was made by x-ray.

Autopsies were performed on seventeen of these children. Eleven were found to have miliary tuberculosis; four, apical pulmonary tuberculosis; one, a calcified primary tuberculous focus in the right lower lobe; and in one child the lungs were normal but the hilar lymph nodes showed scattered tubercles with central necrosis. In only five cases were tuberculomas found; however, in all cases definite evidence of tuberculous meningitis was found in the brain and meninges.

Although tuberculous meningitis, more often than most childhood diseases, occurs in its classical form, atypical cases are sufficiently common to lead to confusion in diagnosis[1]. For example, in five of these cases many equivocal signs did not become strongly positive until the children were very near death, and one 3 year old white boy seemed to have intestinal obstruction for four days before he developed definite signs of meningitis.

Although the number of patients admitted to the Duke Hospital for all causes each year has gradually increased (fig. 1), the number of children with tuberculous meningitis admitted each year over the same period has increased at a more rapid rate (fig. 2). The sharp increase in the number of cases in 1936-1937, 1939-1940, and 1942, preceded by low levels in 1935, 1938 and 1941, is interesting but does not appear to correlate with the total number of such cases in the state of North Carolina during the same period

1. Thelander, H. E. and Baldwin, J.: Variability of Findings in Tuberculous Meningitis, Arch. Pediat. 55:225-232 (April) 1938

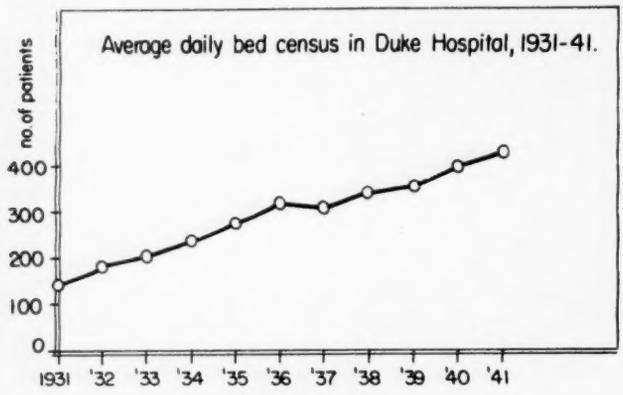

Fig. 1. Average daily bed census in Duke Hospital, 1931-1941.

(fig. 2)[2]. Most of our patients were seen in January, May, July and September—May being the peak month (fig. 2).

There has been a real increase in deaths from tuberculosis in England since the beginning of the war, and this has been accompanied by a great increase in cases of tuberculous meningitis among children[3]. In London and environs, the incidence of tuberculous meningitis among all ages during the period 1938 to 1941 increased 250 per cent[4].

Many cases of tuberculous meningitis have been reported as being cured[5]. Kramer and Stein in 1931 reviewed the literature for the past seventy years and found seventy-three reports of tuberculous meningitis with recovery[6]. Only 37 per cent of these patients, however, were under 10 years of age. Of the patients under 2½ years, only one recovered, while fifteen under the age of 5 years recovered. All of our patients died. Several years ago we saw a child with the typical findings of tuberculous meningitis. The child apparently recovered; however, he died with meningeal signs several months after being sent home. Autopsy showed that the child had had a well walled-off tuberculoma, which had finally broken down. I doubt that all of the reported recoveries were of this same type, although some of them

2. Annual Report of the Bureau of Vital Statistics, for the Years 1931 through 1939, published by the State of North Carolina.
3. Medical Research Council, London. Report of the Committee on Tuberculosis in War-Time. Special report series no. 246, His Majesty's Stationery Office, 1942.
4. Daley, W. A. and Benjamin, B.: Tuberculosis in London in Wartime, Brit. M. J. 2:417-420 (Oct. 10) 1942.
5. (a) Kelly, G. F.: Remission in Tuberculous Meningitis, Am. J. Dis. Child. 47:591-592 (March) 1934.
   (b) Blacklock, J. W. S. and Griffin, M. A.: Tuberculous Meningitis in Children, J. Path. and Bact. 40:489-502 (May) 1935.
6. Kramer, D. W. and Stein, B. B.: Tuberculous Meningitis with Syphilitic Meningitis Terminating in Recovery, Arch. Int. Med. 48:576-591 (Oct.) 1931.

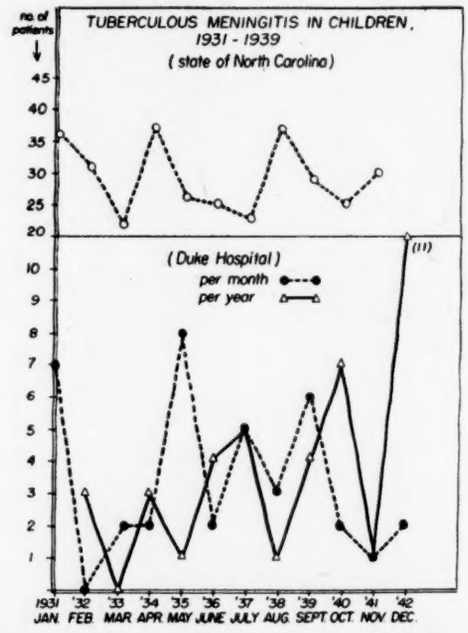

Fig. 2. Cases of tuberculous meningitis in children under 14 years of age in the state of North Carolina from 1931-1939, and in the Duke Hospital from 1931-1942.

may have been. Age seems to be an important factor in recovery[7]. Kramer and Stein seem to feel that different degrees of virulence in tubercle bacilli could account for some of the recoveries[6].

Whatever the factor or factors in recovery, our only hope at this date is prevention, and prevention is dependent upon avoidance of contact with active disease.

7. (a) Wallgren, A.: Some Aspects of Tuberculous Meningitis and Possibility of Its Prevention, J. Pediat. 5:291-298 (Sept.) 1934.
   (b) Dunn, C. H.: The Cytodiagnosis of Tuberculous Meningitis and the Possibility of Recovery, Arch. Pediat. 27:685-698, 1910.

Author's Note: Since this paper was submitted for publication we have had another case of tuberculous meningitis at Duke Hospital. The child was a colored female 8 months of age who had had frequent upper respiratory infections for the two months preceding admission. Eight days before admission she developed an upper respiratory infection and became fretful, anoretic and drowsy. Twenty-four hours before admission she began to have generalized convulsions. Physical examination was negative except for a moderately stiff neck. The next day she was generally spastic, however, and the Kernig sign was bilaterally positive. The spinal fluid was typical of tuberculous meningitis. A 1:10,000 dilution of old tuberculin was positive on the second day. She died before a chest x-ray could be obtained. Autopsy revealed miliary tuberculosis in both lungs, and also in the liver, kidneys and spleen. There was also a typical tuberculous meningitis. The contact was a neighbor with pulmonary tuberculosis, who saw much of the child. Interestingly enough, although the blood serology was negative, the spinal fluid Wassermann was positive.

THE EVOLUTION OF DRUG THERAPY

ARTHUR GROLLMAN, M. D., Ph. D.
WINSTON-SALEM

From the earliest times of recorded history man has sought in his environment for medicaments to alleviate his ills, annihilate his enemies and add to his desired virtues of strength, beauty and fertility. The progress of this evolution from magic through iatrochemistry to modern scientific medicine reflects man's own development during this period.

Therapy Among Primitive Peoples

Primitive man learned by experience to use many plants and animal tissues as medicaments, and some of these are still in use among the few remaining primitive peoples of the earth. The Negroes of the African West Coast were discovered by missionaries visiting them during the nineteenth century to be using the calabar bean in their trial by ordeal. This poison afforded a simple legal procedure. The prisoner at the bar of justice was given a potion of the drug; if he died he was guilty; if he survived he was innocent. Nor was this procedure without some merit; for the innocent man, with firm faith in the justice of the procedure, would boldly drink the potion down in one gulp, with a resulting emesis due to its gastric irritation that saved him from its absorption and lethal effects. The guilty one, on the other hand, by consuming it slowly and with apprehension, would circumvent the emetic action and suffer the effects of the absorbed poison[1]. Today we use the active principle of the same bean in medicine as physostigmine.

The Indians of the Orinoco Valley of the Amazon use the juice of a local plant—curare—to coat their arrows. This potent poison paralyzes the animal hunted for prey, or the human enemy. Today, we utilize the same drug in smaller doses to paralyze the muscles in convulsive therapy.

Numerous other useful substances may be mentioned which have been employed from earliest times of recorded history: squill, mentioned in the Ebers Papyrus of Ancient Egypt; ephedrine, employed by the Chinese; iodine, mentioned in the Bamberg surgery of the thirteenth century; quinine, the Peruvian bark used by the Indians of South America. But the use of these substances was purely empirical and accidental; for in most cases the exact indications for the drugs were not known, and thus ultimately they fell into disrepute. In most cases the effective materials were mixed with a multitude of noxious and inert materials and their administration was accompanied by incantations and voodooism, which were depended upon more than the drug itself. The Chinese, for example, utilized ephedrine for numerous conditions in which we know it to be ineffective, but failed to advocate its use for the one condition—bronchial asthma—in which it is most valuable.

Primitive man merely adopted the materials which nature provided. As civilization advanced these natural products were modified, purified and adapted for purposes other than that for which they were originally utilized. And finally, with the aid of synthetic chemistry, we try to create not only by duplicating the natural product but also by producing new derivatives and entirely new compounds, which may be superior to the naturally occurring substances. Today not only has the calabar bean been adapted for other uses than trial by ordeal, but a new compound—prostigmin—has been created which for many purposes is superior to the naturally occurring drug.

To cite another instance of the adaptation of drugs used in primitive cultures to modern medicine, the natives of South America discovered the stimulating effects derived from chewing the leaves of the coca plant. The active principle responsible for this action—cocaine—was isolated in 1860, and in 1902 the natural alkaloid was produced in the laboratory. Since then numerous other compounds have been synthesized as local anesthetics which have no counterpart among natural products and are superior to the latter in their safety and efficacy.

In its early development, pharmacy was intertwined with magic, sorcery, and astrology. In ancient Egypt, as among the primitive tribes of modern times, the practice of alchemy was, with sorcery and astrology, a prerogative of the priests, who handed on

Read before The Torch Club, Winston-Salem, November 12, 1942.
From the Department of Medicine, Bowman Gray School of Medicine of Wake Forest College, Winston-Salem.

1. Goodman, L. and Gilman, A.: The Pharmacological Basis of Therapeutics, New York, The Macmillan Co., 1941, p. 376.

their secrets only to their successors. Even during the early centuries of the Christian era, this same philosophy prevailed, and hence the secrets of alchemy, astrology, sorcery and mathematics—the science of that period—were either conveyed by word of mouth or recorded in symbols and mystical characters. Only a small part of the ancient lore of Egypt, China, Chaldea, Byzantium, and the dark ages of the first millenium of the Christian Era has come down to us.

Pharmacy in the Middle Ages

At the middle of the second millenium, when the discovery of the New World signalled the dawn of a new age, there appeared a personality who was far beyond his contemporaries in their narrow scholastic philosophy and who may be looked upon as the pioneer of modern pharmacy and medicine. Philippus Areolus Theophrastus Bombastus of Hohenheim, called Paracelsus, was born in the year following Columbus' discovery of the New World. He was a dynamic character in whom two great cultural epochs met. Trained in the intellectual atmosphere of alchemy and astrology, he remained an alchemist and physician who devoted his attention to the preparation of medicines and the treatment of disease[2].

Paracelsus introduced the use of metals as remedies. He discovered the efficacy of mercury in syphilis and dropsy. His procedure of extracting the "quinta essentia" from medicinal plants inaugurated our modern procedures of extraction. Paracelsus first advocated the use of natural baths and diet for metabolic disturbances, migraine and epilepsy. To him also belongs credit for first describing silicosis, the miner's disease. The modern view of the entity of the organism was expressed in his aphorism, "To the physician, man should not mean a bundle of flesh and bones, tendons and limbs, but a product of all nature." This sentence epitomizes well the preachings of Haldane, Meyer and others who have stressed the importance of looking upon the individual as a whole rather than as an assemblage of independent parts.

The low state of medical practice at the beginning of the sixteenth century is well described in Robert Browning's description of Paracelsus' visit to the bedridden Margrave of Baden:

> Here drivelled the physician,
> Whose most infallible nostrum was at fault;
> There quaked the astrologer, whose horoscope
> Had promised him interminable years;
> Here a monk fumbled at the sick man's mouth
> With some undoubted relic—a sudary
> Of the virgin; while another piebald knave
> Of the same brotherhood (he loved them ever)
> Was actively preparing 'neath his nose
> Such a suffumigation as, once fired,
> Had stunk the patient dead ere he could groan.
> I cursed the doctor and upset the brother,
> Brushed past the conjurer, vowed that the first gust
> Of stench from the ingredients just alight
> Would raise a cross-grained devil in my sword,
> Not easily laid: and ere an hour the prince
> Slept as he never slept since prince he was.

Drug Therapy in the Seventeenth and Eighteenth Centuries

Pharmacy and its practitioners reached a low state indeed in the seventeenth and eighteenth centuries, if we may judge by the literature of that day. While Paracelsus had used alchemy as a basis for developing the first fundamental principles of iatrochemical therapeutics, alchemy soon degenerated into a mere hunt for gold and the philosopher's stone. It was this situation which evoked Ben Jonson's satiric play, "The Alchemist", directed against the deceitful alchemist and the greed for gold of the duped.

It was not until the seventeenth century that pharmacy attained the status of an independent profession. As members of a joint guild with the grocers, the pharmacists demanded of James I the rights of self-organization. In 1617 they were successful and founded the "Apothecaries Society". The struggle between the apothecary and the physician continued, however, for many years, each attempting to take duties which the other considered to be their prerogative.

The types of remedies used in Elizabethan England are exemplified by those mentioned in Shakespeare's plays. Here we find enumerated more than thirty medicinal herbs and drugs, including rhubarb, senna, camomile, ginger, opium and others in use today, as well as such things as "sympathetic powders", "aurum potabile", "mummy powders", "blood of dragons" and pills made from the skull of a man who had been hanged. Poisons also occupied an important, although illegal, part of the drugger's trade, as portrayed in several of Shakespeare's plays. Thus, in Henry VI we find Cardinal Beaufort crying on his deathbed:

> Bid the apothecary bring
> The strong poison that I bought of him.

2. Four Treatises of Theophrastus von Hohenheim, Called Paracelsus, Edited by H. E. Sigerist, Baltimore, The Johns Hopkins Press, 1941.

And in the famous scene in Romeo and Juliet Romeo, paying the poverty stricken pharmacist, says:

> There is thy gold, worse poison to men's souls,
> Doing more murders in this loathsome world,
> Than these poor compounds that thou mayst not sell.
> I sell thee poison; thou hast sold me none.

The seventeenth century saw a great increase in the number of chemical compounds available for therapeutic use. Laboring over their retorts and alembics the alchemists prepared for the first time numerous new salts, acids and compounds which they indiscriminately used for all afflictions. Among those who stand out preeminent at the time is van Helmont (1576-1644), who first distinguished acidity and alkalinity and recognized fermentation as a chemical process. He was the first to recommend and use alkalies for disturbances in digestion, and acids for conditions which he thought were due to the lack of acidity.

Every product of the alchemist, being new, seemed to possess miraculous properties, and in the state of ignorance of physiology which existed in that period it is not surprising to find each new drug prescribed for every ill. No writer of the period has satirized this situation better than Moliere, who in his "Malade Imaginaire" shows his accurate familiarity with the medicine of his time as well as with its pharmaceutical usage. He himself had a pulmonic disorder to which he succumbed just a few days after the opening of his play. He no doubt was well acquainted by personal experience with the remedies to which Monsieur Aragon was subjected.

The Rise of Scientific Medicine

The great advances in scientific medicine of the eighteenth and nineteenth centuries saw the introduction of many new and effective drugs—digitalis, emetin, cascara, and others. Many of these substances had been previously known and used empirically. It was not until the basis for their action was better understood that these drugs could be used rationally and to good effect.

Drug therapy during this period, although a much practiced art, could well be derided by the sceptical mind. As Oliver Wendell Holmes expressed it, "If all the drugs were sent to the bottom of the sea, it would be better for mankind and to the hurt of the fishes." At a more recent date Osler could say that only four drugs merited the title of specific remedies (quinine, iron, mercury, ipecac).

The modern evolution of drug therapy may be said to begin with Paul Ehrlich, who first envisioned the role which synthetic chemistry could play in elaborating compounds to alleviate human ills. He discovered arsphenamine, the curative drug for syphilis, and showed the way in which other "magic bullets" might be fashioned to counter other diseases. Chemotherapy in the two decades following Ehrlich produced nothing commensurate with his expectations, but with the introduction of the sulfonamide drugs this branch of science has again reached the forefront of medical progress. Numerous specifics have been discovered to combat human infections, and chemists are actively engaged in multiplying our available drugs for combatting disease.

The modern advances in therapy have not been limited to the production of drugs alone. The chemist has made available in synthetic form many of the vitamins, those dietary essentials which civilized man often lacks, and some of the hormones to replace the function of defective endocrine glands. The preparation of sera and vaccines has made it possible to confer immunity to such dread scourges as typhus, diphtheria and small pox which have decimated mankind in the past.

But even with this scientific accomplishment quackery with its nostrums has flourished as from time immemorial. The large advertisements for proprietary mixtures which stare us in the face from the morning newspaper and the blatant claims which come forth from the radio still maintain alive the spirit of the primitive voodoo man. Nor can the greed for gain be divorced from pharmacy so long as it remains a commercial industry.

In the laboratories, which Pasteur called "the temples of the future", the magical allegories of alchemy and the dreams of the past are being translated into the reality of the prosaic formulae of modern chemistry.

Tuberculosis is a chronic disease but in times of stress with restrictions on diet and hygienic living, its frequency always increases. Already the rates are beginning to rise, even in this country, and abroad there are hints that tuberculosis is taking its usual war-time toll. Ann'l Rep. Saranac Lab. for Study of Tuber., 1941.

North Carolina Medical Journal

Owned and Published by
The Medical Society of the State of North Carolina,
under the direction of its Editorial Board.

EDITORIAL BOARD

Wingate M. Johnson, M.D., Winston-Salem
Editor.
Miss Catherine Johnson, Winston-Salem
Assistant Editor.
Roscoe D. McMillan, M.D., Red Springs
Business Manager.
Paul P. McCain, M.D., Sanatorium, Chairman.
W. Reece Berryhill, M.D., Chapel Hill.
Coy C. Carpenter, M.D., Winston-Salem.
Frederic M. Hanes, M.D., Durham.
Paul H. Ringer, M.D., Asheville.
Hubert A. Royster, M.D., Raleigh.

Address manuscripts and communications regarding editorial matter to the
NORTH CAROLINA MEDICAL JOURNAL
300 South Hawthorne Road, Winston-Salem, N. C.

Questions relating to subscription rates, advertising, etc., should be addressed to the Business Manager, Red Springs, N. C.

All advertisements are accepted subject to the approval of the Council on Pharmacy and Chemistry of the American Medical Association.

Annual subscription $3.00 Single copies 30c

Publication office: Penry-Aitchison Printing Co., 118 West Third Street, Winston-Salem, N. C.

MAY, 1943

WOMEN AND THE WAR

Since Pearl Harbor every family doctor in active practice must have been impressed by the effect of the war upon the women of America. Many women have become directly engaged in the war effort as members of the WAACS, WAVES, and other official organizations. Those who have paid the greatest price, however, are those who have stayed at home. Some have never left the shelter of the farm house; others have kept on the job as stenographers, waitresses, clerks, or secretaries; still others have sought to help win the war by working in the Red Cross sewing rooms, by becoming nurses aides, or by engaging in other defense work.

It need not detract one iota from the praise due the men who are gallantly fighting for our country, to say that their mothers, wives, sisters and sweethearts have really suffered more than they. One sees almost daily the marks of this suffering. Peptic ulcers are almost as frequently seen now in women as in men; painful spastic colons are encountered regularly; even coronary heart disease is numbering an increasing proportion of women among its victims. Many women not so seriously scarred show on their faces the strain of sleepless nights. A noticeable number have developed cancer-phobia, and can hardly be persuaded that their suffering can be without organic cause.

The average doctor in civilian practice is carrying such a terrific load that it is often hard for him to be patient with these innocent victims of man's inhumanity to man; but never have women needed sympathy, encouragement and advice as now. Allowing them to talk to an understanding person often helps relieve the tension, and a thorough examination may reassure them that they have no serious organic disease. Frequently the most helpful prescription we can give them is Osler's excellent advice: to live one day at a time.

* * * *

PHYSICIAN HAVE THYSELF EXAMINED*

The subject of this editorial was suggested by a colleague whose patriotism exceeded his stamina. He learned by experience what some of us who are past middle age should apply as a preventive measure, i.e., the value of having a careful physical examination made by a chosen colleague. In our ardent desire to do our full part in the war we can best serve by limiting our efforts to our physical capacity. To do this successfully we must *ourselves* be carefully examined and advised before we start.

Some of our members who are beyond the draft age are doing their bit by taking over work of younger colleagues who have gone to war. This is a noble aim and effort and within reason can be successfully and safely carried on—but—physician know thyself and thine infirmities if they exist, ere thou enter upon thy task. We need all good men and true in these trying times, especially physicians, and the men who keep on the job longest and accomplish most in the long run, are those who do not sacrifice themselves prematurely and unnecessarily by assuming an unbearable load at the outset of a truly patriotic undertaking. That youthful resilience we once enjoyed is no longer present in some of us, and discretion at our age is the better part of valor.

* Editorial, J. M. Soc. New Jersey, 39:570 (Nov.) 1942.

THE MEDICAL CARE OF EXECUTIVES

The *Illinois Medical Journal* for April features a symposium on Industrial Health, in which are printed a number of papers read before the Conference on Industrial Health held in Chicago in January. The papers are all good; but the high water mark is reached in the paper by Dr. Walter C. Alvarez, "The Medical Care of Executives." With characteristic common sense the author points out the importance of conserving "the executives, engineers, architects and other brain workers who keep millions of workers supplied with blueprints, tools, materials and technical training."

It is true that while there is much talk about caring for the worker, little is said about caring for the men who keep the workers busy. Alvarez reminds us that a good executive is not easy to find or develop, and that "every able executive in industry today is a tremendous asset not only to his company but to the country as a whole and every effort must be made to keep him fit and to prolong his period of useful life."

During the present emergency it is only natural for every patriotic American to want to do his full duty; and the greater his responsibility, the more keenly he feels the obligation to his country. Such men as Alvarez describes need no spur to increase their efforts; but they do need to be encouraged to spare themselves every bit of detail possible, to secure enough sleep, to relax for a short time after meals, and to take frequent short holidays from business. One measure of a good executive is the ability to delegate authority to subordinates. Overeating and sketchy, hurried meals are equally to be avoided, as are excessive smoking and drinking.

If every doctor who is the personal physician of a high-powered executive would exercise his professional authority to insist that his patient obey the elementary rules of health, he would be rendering a real service to his country. And the physician should himself set an example to such patients—for the doctor, too, ranks in the executive class.

"BY PERMISSION OF ALFRED A. KNOPF, INC."

Some of our readers have commented upon the aptness of the sonnet by Hans Zinsser which was quoted in the editorial on Dr. F. B. Watkins in last month's issue of this JOURNAL. The story behind the use of this bit of verse may be of interest to some, and a warning to the editors of other state medical journals.

On March 25 the assistant editor of the NORTH CAROLINA MEDICAL JOURNAL wrote the editor of the *Atlantic Monthly* for permission to reprint part of Zinsser's sonnet, which first appeared in that magazine. A courteous reply came promptly, informing her that the "copyright in the Hans Zinsser material has been assigned to Little, Brown and Company. . . . It is accordingly necessary for you to write to them for the permission which you wish." A letter was promptly sent to Little, Brown and Company. When no reply had come at the end of eighteen days, it was necessary either to withdraw the verse or to assume that the desired permission would be forthcoming. Inasmuch as no publisher had ever refused us such a request, and since our relations with the *Atlantic Monthly* and its publishers, Little, Brown and Company have always been most cordial and satisfactory, it was felt certain that there would be no objection to quoting the sonnet. Imagine the surprise, therefore, with which the following communication was received the day after the April issue of the NORTH CAROLINA MEDICAL JOURNAL came off the press:

> "Your letter of March 30, addressed to Little Brown and Co., has been referred to us, since we control the rights in Hans Zinsser.
>
> "For permission to reprint in the "North Carolina Medical Journal" part of the last sonnet, which appeared on page 441 of AS I REMEMBER HIM, we shall have to ask a fee of $5.00. If this is agreeable to you will you please fill out the enclosed permission forms, which go to you in duplicate, and return both copies to us for our signature.
>
> "Yours faithfully,
> for ALFRED A. KNOPF, INC.
> "E. Rosenthal
> "Permissions Department"

The check was sent, and this time a

prompt acknowledgment came:

"Thank you for your check in amount of $5.00 covering permission to reprint part of the last sonnet which appeared on page 441 of AS I REMEMBER HIM and in our book, SPRING, SUMMER AND AUTUMN by Hans Zinsser.

"We would appreciate your publishing a statement in your next issue that the sonnet was reprinted from this book by permission of ALFRED A. KNOPF, INC.

"Yours faithfully,
for ALFRED A. KNOPF, INC.
"E. Rosenthal
"Permissions Dept."

In accord with their wishes, the NORTH CAROLINA MEDICAL JOURNAL takes pleasure in stating that part of Zinsser's last sonnet was reprinted by permission of ALFRED A. KNOPF, INC., in consideration of five dollars —not to mention the free advertising given Zinsser's book. Somehow it is hard to believe that that great man would approve of a medical journal's having to pay cash to apply his beautiful sentiment to another doctor who had also faced death unafraid.

* * * *

PERIBRONCHITIS

There is a lesion of the lungs, very properly called *peribronchitis,* which produces a characteristic syndrome. It is seldom described as a disease entity in the textbooks, and, in practice, frequently is confused with tuberculosis. Since it is the result of "upper respiratory infections", it is not an uncommon sequel to such infections.

The clinical picture presented is that of recurring exacerbations of a chronic lung infection, with short bouts of fever and cough productive of mucopurulent sputum. As a rule the fever lasts for only a few days, but the cough, expectoration and physical signs may persist for a considerable period.

On physical examination one finds no signs of consolidation, but a profusion of fine moist rales is heard over a part, or the whole, of one lobe of the lungs. Usually the lower lobe is affected, and the moist rales may persist for weeks or months. There is no characteristic radiographic picture.

The diagnosis is based on the extensive physical signs of pulmonary infection, with the history of recurring bouts of cough and fever, together with the absence of tubercle bacilli on repeated examinations of the sputum. The contrast between the degree of lung involvement and the slight constitutional evidences of disease is so very striking as to be a distinct aid in diagnosis.

Treatment should be directed to the eradication of sources of chronic infection in the nose and throat. Infected sinuses, teeth, adenoids and tonsils may cause repeated infection of the injured bronchi, resulting in progressive fibrosis of the bronchial walls following each attack of peribronchitis. Bronchiectasis may result. There is no evidence that prolonged bed-rest is of value, and the prognosis depends upon the severity and frequency of the characteristic bouts of fever and cough.

* * * *

DR. WILLIAM ALLAN

Death came quietly to Dr. William Allan at the North Carolina Baptist Hospital on Saturday, April 24. For more than a year he had lived under the shadow of death, but had gone ahead with his work—crowning a life of brilliant achievement with the organization of his Department of Medical Genetics at the Bowman Gray School of Medicine, and with the arrangement of the mass of material he had collected on this subject, so that his work may be carried on by his successors.

The editorial staff of the *Journal of the Bowman Gray School of Medicine* is planning to devote their next issue to a commemoration of Dr. Allan's achievements. This magazine will be available to his friends. Meanwhile it may be said that his was a full, rich and useful life. His contributions to medicine—not only in North Carolina, but in the nation—were many. The one who knew him best paid the highest tribute possible when she said, "He never did a little thing in his life." One of his colleagues who had had the sad privilege of making his last hours comfortable voiced the sentiment of all when he said: "That is just the way he wanted to go—working to the very last."

Dr. Allan's departure from this life came on the eve of Easter Sunday. Because his influence will live on and on, surely it may be said that his resurrection is already accomplished.

CASE REPORTS

CLINICO-PATHOLOGICAL CONFERENCE

BOWMAN GRAY SCHOOL OF MEDICINE OF WAKE FOREST COLLEGE

Case Summary

This 53 year old retired pharmacist was admitted to the North Carolina Baptist Hospital first on November 20, 1942. He had been a known diabetic for sixteen years prior to this admission. Two years after the discovery that he had diabetes he began to lose weight, and had polyuria, polydipsia, polyphagia, and weakness. Since that time he had been taking from 10 to 30 units of insulin a day. Three years ago he had a cellulitis of the right foot and went into coma. For the past three years he had taken protamine-zinc insulin, 20 units a day. For the past two years he had had decreasing vision in the right eye and severe frontal headaches, usually localized over the right eye. He had also had intermittent ankle edema and had known for several years that he had hypertension. At the age of 20 he had gonorrhea which was resistant to treatment. He had drunk heavily for the last five or six years. For two weeks prior to this first admission he had had morning vomiting and hypoglycemic reactions. There was a family history of diabetes.

Essential points in the physical examination on the first admission were puffiness of the eyelids, a dirty color of the skin, poor reaction of the pupils to light, and a lens opacity on the right with large areas of exudate and hemorrhage in the nasal portion of the retina. Arteriovenous nicking was fairly marked. The heart was slightly enlarged to the left. The blood pressure was 180 systolic, 110 diastolic. There was a slight prostatic enlargement. Urinalysis showed a 2 to 3 plus reaction for albumin, a 3 plus reaction for sugar, and varying numbers of white blood cells and granular casts. The nonprotein nitrogen was 44.3 mg. per 100 cc., cholesterol 374 mg. Total serum proteins were 4.6 Gm. The phenolsulfonphthalein test was 34 per cent, and the Fishberg concentration test 1.001. A glucose tolerance test showed a diabetic type of curve.

Since discharge on December 4, 1942, the patient had vomited considerably, particularly early in the morning. Two weeks prior to the second admission he vomited practically everything he had eaten. At times, during the two weeks before admission, he had to sit up in bed to get his breath. He had had nocturia two or three times a night. His headaches, mentioned in the first admission, were particularly severe during the two weeks prior to his second admission on February 4, 1943.

Physical examination on the second admission showed the blood pressure to be 180 systolic, 100 diastolic. The patient was a well developed, well nourished white male whose eyelids were slightly puffy and whose skin had a sallow color. There were a few moist rales at both lung bases. The heart was enlarged about 1 cm. outside the midclavicular line. The liver was palpable two finger breadths below the right costal margin and was moderately tender. There was a small indirect inguinal hernia. Rectal examination showed the prostate to be moderately enlarged. There was slight pretibial edema.

The urine gave a 3 plus reaction for albumin. The reaction for sugar varied from negative to 1 plus. There were occasional hyalin casts and white blood cells. The hemoglobin was 7.5 Gm. There were 2,900,000 red blood cells, and 13,100 white blood cells. The differential count was normal. The nonprotein nitrogen was 9.5 mg. per 100 cc. Examination of the stool was negative. An electrocardiogram showed sinus tachycardia.

The patient got along fairly well until the fifth hospital day, at which time he had an insulin reaction. He then began to have a recurrence of the vomiting. A note on February 17, 1943, states that the patient was showing signs of cardiac failure, with dyspnea and generalized edema. Blood chlorides were found to be low. An attempt was made to replace chlorides and proteins, and the patient was started on digitalis. He continued to vomit, however, went down-hill rapidly, and died on March 2, 1943.

Discussion

DR. TINSLEY R. HARRISON: The patient displayed rather profuse albuminuria, well-marked hypoproteinemia and slight edema, which tended to involve the face more than the rest of the body. The edema antedated

the dyspnea. These facts lead one to the conclusion that we are dealing with a nephrotic syndrome, although the presence of hypertension and terminal renal insufficiency would indicate that this is not a case of "pure" lipoid nephrosis. We therefore have to ask ourselves what condition will produce the combination of diabetes, hypertension and the nephrotic syndrome.

Diabetes and hypertension are associated in a number of conditions, among them Cushing's disease, the several adreno-genital syndromes, and the condition which Dr. Rousseau and Dr. Grollman have recently been studying carefully—namely, *hyperostosis frontalis interna*. However, none of these conditions are likely to be associated with nephrosis.

Hypertension, in association with excessive albuminuria, hypoproteinemia and edema, may occur in the second or subacute stage of glomerular nephritis, in some of the "toxemias" of pregnancy, and in certain instances of renal amyloidosis. However, none of these conditions will account for the diabetes unless we make the unlikely assumption that there was pancreatic amyloidosis. If this condition were present one would expect the excretory as well as the incretory function of the pancreas to be involved.

Various types of degenerative changes in the kidney may occur in diabetes. Among these are the fatty degeneration of the tubules sometimes seen in diabetics with long-standing hypercholesterolemia, and the deposition of glycogen, which is frequently seen in the tubules and sometimes involves the glomerular membrane. In neither instance, however, does one commonly have hypertension.

So far as I know, there is only one condition in which diabetes, hypertension and the nephrotic picture are likely to occur, and this is the condition known as intercapillary glomerular sclerosis, or the Kimmelstiel-Wilson disease. Here, we have extensive changes in the basement membrane of the glomerulus, and particularly that part of it which separates one capillary tuft from another. This picture is not unlike that which sometimes occurs in patients with essential hypertension without diabetes, and I believe that similar changes are occasionally seen in patients who have neither hypertension nor diabetes. However, the extensive changes—so extensive that the name glomerular sclerosis has been applied to them—do not usually occur except in people with long-standing diabetes, and such patients usually develop hypertension probably as the result of obstruction to the blood flow through the kidney consequent to the glomerular changes. The patients with intercapillary glomerular sclerosis usually are middle-aged individuals who have had diabetes for a number of years. After a variable period with edema and massive albuminuria and mild hypertension, the blood pressure rises further and renal insufficiency sets in. Except for the absence of a story of acute nephritis with hematuria in the past, and except for the presence of diabetes, the clinical picture in these patients resembles that of chronic glomerular nephritis in that the course is rather prolonged, lasting for several months or several years, and finally terminates in uremia.

In view of these considerations I do not believe that the case under discussion offers any particular difficulties in diagnosis. I think we are almost surely dealing with the Kimmelstiel-Wilson disease, or intercapillary glomerular sclerosis.

There is a mistaken tendency to assume that our ability to diagnose a given disease necessarily implies that we know a great deal about the disease. Such a complacent state of mind is to be deplored because it is a bar to further progress. It represents a nineteenth century mental attitude toward medicine. During the past century most progress in medicine came from learning to correlate clinical pictures with morbid anatomy. However, the twentieth century has been characterized by an attempt to go further, to be dissatisfied with only *knowing* about disease, and to make an attempt to *understand* disease. Actually, when we say that this patient had intercapillary glomerular sclerosis, we are simply offering a name to the disease, but we are not explaining the series of events which led to death. There are stil many gaps in our knowledge to be filled. Why, for instance, should diabetes lead to this particular change in the glomeruli? Is it the result of glycogen formation in the cells of the capillary basement membrane? Is it the result of some irritating process set up by the constant passage of sugar through the membranes? Is one to consider that perhaps the deficiency in carbohydrate metabolism leads, through some other mechanism, to the thickening of the

glomerulus? These are questions for which we have no answer at the present time. Similarly, it is not sufficient to say that the sclerosing process in the glomeruli leads to obstruction of the renal blood flow and therefore to hypertension. Why does interference with the renal blood flow lead to hypertension? Does this lead to the production of excessive amounts of pressor substance in the kidney? There is considerable evidence to suggest that this may be the case but it is not, to my mind, completely convincing at the present time. Does the disease in the kidneys lead to a deficiency in the production of an anti-pressor substance which normally tends to maintain the blood pressure at its relatively low level? There is likewise considerable evidence for this hypothesis, but again such evidence cannot be considered convincing at present. Is there a combination of excessive pressor action and deficient anti-pressor action by the diseased kidneys? Again, there is some evidence in favor of this assumption, but not enough to prove it.

We may also ask ourselves why, with thickening of the capillary basement membrane, there is increased protein excretion in the urine. One might think that the thicker membrane would be less permeable instead of more permeable than normal. There is, in fact, certain evidence derived from the work of Epstein and others, which suggests that the albuminuria of nephrotic states is due to a primary change in the nature of the protein molecule, which becomes a foreign substance to the body, and hence is excreted. However, such an assumption would not explain why the urine in these patients contains excessive amounts of fat, and why Congo red is likewise more readily excreted than normal. Hence, I think we have to assume that the thickened capillary membrane actually is more permeable than the normal thin membrane. Then it follows that the increased amount of protein in the urine is the result of this increased permeability of the glomerular capillary walls. Because of the excessive loss of protein there is a depletion of plasma protein with decrease in osmotic pressure in the blood, and hence the tendency to edema. This train of events seems to rest on reasonably sound evidence. However, we immediately encounter another mystery. In the case of proteins the excessive urinary excretion leads to a deficiency in the blood. However, in the case of fats, just the reverse happens; for even though the amount of fat excreted in the urine in nephrotic states is greater than normal we have hyperlipemia rather than deficiency of fat in the blood stream. The mechanism of this hyperlipemia is still not understood. In some experimental animals artificial depletion of plasma proteins sometimes results in increase in cholesterol and other lipid substances, but in other species this does not seem to occur.

The purpose of this discussion has been to point out that *knowledge* of disease, in the sense of ability to predict the pathologic change in the tissues, cannot be considered adequate. We must also seek for *understanding* of disease. This can only be done by an attempt to apply the functional methods of chemistry, physics and physiology to the older morphologic methods. Much has been learned but there is a vastly greater amount still to be learned. The physician can never afford to rest upon his oars.

Dr. Harrison's Diagnosis

Intercapillary glomerular sclerosis (Kimmelstiel-Wilson disease)

Anatomical Discussion

DR. ROBERT P. MOREHEAD: I thoroughly agree with Dr. Harrison that this complex problem can never be settled by morphologic methods alone. One finds many different types of glomerular lesions associated with the nephrotic syndrome, and as the terminal stages of the diseases are reached, they merge insensibly one into the other. The picture is further complicated by the fact that lesions identical with those seen in the various types of clinical nephrosis are not infrequently seen in patients not displaying this syndrome.

Interest in this case centers around the possibility of its belonging to the group of cases described by Kimmelstiel and Wilson in 1936[1]. On purely morphologic grounds, the case represents one of far advanced intercapillary glomerulosclerosis. I sent slides prepared from this material to Dr. Kimmelstiel, and he concurs in this opinion.

1. Kimmelstiel, P., and Wilson, C.: Intercapillary Lesions in Glomeruli of Kidney, Am. J. Path. 12:83-98 (Jan.) 1936.

Anatomical Diagnosis

1. Intercapillary glomerulosclerosis (Kimmelstiel-Wilson disease)
2. Cardiac hypertrophy and dilatation
3. Fibrinous pericarditis
4. Arteriolosclerosis
5. Right hydroureter
6. Pulmonary edema
7. Anasarca

MEDICOLEGAL ABSTRACT

J. F. Owen, M.D., LL.B.
Raleigh

Negligence: A departure from approved methods in general use, if injurious to the patient, suffices to carry the case to the jury on the issue of negligence.

The following is an account of a civil action instituted for the purpose of recovering damages for alleged negligence on the part of a physician in failing to treat his patient properly after setting a bone in her right forearm.

The evidence in the case tended to show that on November 15, 1940, the plaintiff fell and sustained a fracture of the radius of the right forearm. The defendant, a physician, was called to treat her. He reduced the fracture and placed the arm and wrist on a board splint. Later he removed the board splint and used a metal cast, at the same time massaging the plaintiff's arm and hand. After that, the attending doctor saw the patient once or twice a week, and, in the patient's words: "Each time he (the doctor) came he brought a tube or something, and massaged my arm. He would take my arm out of the cast and massage it. He would not support the broken part of my arm while he was massaging it. He held it with the fingers of one hand, and rubbed my arm and hand with the other hand."

At the end of three months and ten days the plaintiff's fingers were rigid, and there was a deformity about the hand, resulting in the inability of the plaintiff to use it. Finally the defendant doctor took the patient to another physician, who examined her, and took an x-ray picture. The consultant found the wrist and hand out of alignment, and the bone was found to be out of position. He testified at the trial that the displacement could have occurred when the defendant removed the arm from the splint. There was further expert evidence to the effect that the manner in which the defendant massaged the plaintiff's arm "was unusual," and not according to the general practice, and that "too frequent removal of a broken bone from the cast is bad practice."

Later on the plaintiff secured the services of another physician who fractured the bone again and reset it. However, the results were only partially satisfactory.

The jury, after hearing the evidence, answered the issues of negligence and contributory negligence in favor of the plaintiff, and assessed her damages in the amount of $600.00.

From the judgment on the verdict the doctor appealed, assigning as error the refusal of the court to dismiss the action as in case of nonsuit.

When this case was considered before the Appellate Court the Justice writing the opinion called attention to certain features of the law which are quite familiar—namely, that a physician is held liable for an injury to a patient resulting from a lack of that degree of knowledge and skill ordinarily possessed by others of his profession, or for the omission to use reasonable care and diligence in the practice of his art, or for the failure to exercise his best judgment in the treatment of the case.

Specifically, he stated that the evidence tended to show that the defendant physician, in the case at hand, in treating the broken arm of the plaintiff, disregarded approved methods in removing the cast once or twice a week, and massaging the hand and arm, thereby not exercising his best judgment.

It was, therefore, the opinion of the Court that this was a case which should have been decided by the jury, and that their verdict was in keeping with the evidence submitted. As a consequence the verdict of the Superior Court, which awarded damages to the plaintiff in the sum of $600.00, was upheld.

In justice to the defendant doctor, it should perhaps be stated in this connection that there may have been some medical reason why he elected to depart from approved methods in the treatment of this case; but in such an event he should have asked for consultation to justify his deviation from the regular routine. After damage has resulted, such as the evidence tended to show with reference to this case, it is rather difficult to obtain medical testimony which would be helpful in defense of an action for negligence. (North Carolina Supreme Court, Vol. 222, Page 637. Decision rendered Spring Term, 1943.)

MILITARY MEDICINE

OFFICE OF CIVILIAN DEFENSE

Pennant To Identify Vehicles In Blackout

A uniform system of identification of emergency vehicles to enable them to operate during real or practice air-raid alarms was announced by the Office of Civilian Defense in Operations Letter No. 111, which is a supplement to Operations Letter No. 97.

The primary identifying device is a white pennant measuring 18 inches along each side with a 6-inch basic Civilian Defense insigne: that is, the letters CD in red inside a white triangle superimposed on a red circle. The pennant is to be attached to the left front portion of the vehicle.

To identify emergency motor vehicles at night, the Operations Letter further prescribes a headlight mask to be used over the right headlamp. This mask may be made of any opaque material that can be easily, quickly, and securely fastened to the headlamp. It is intended for use where blackout regulations permit the use of headlights; in coastal dimout areas it should be used in conjunction with dimout equipment. The design of the mask embodies the "CD" insigne 2½ to 3 inches in diameter in green.

Vehicles entitled to use the emergency identification include (a) vehicles of the armed forces of the United States or of her allies or other vehicles acting under orders or traveling with permission thereof; (b) vehicles of fire departments and governmental police agencies; (c) ambulances and rescue cars and other vehicles converted to such use in emergency services; (d) public utility repair vehicles operating in emergency service; (e) vehicles in

emergency service as defined by State Civilian Defense authorities.

Use of the pennants and masks described was made mandatory for the 16 States and the District of Columbia in the Eastern Defense Command in an administrative order issued by the Director of Civilian Defense in accordance with the new Air Raid Protection Regulations which went into effect February 17. The Operations Letter recommends that all States adopt the definition of emergency motor vehicles and the methods of identification prescribed. Although many states have already adopted different methods of identifying emergency vehicles, it was urged that all States adopt the new devices. It was pointed out that a uniform system is particularly important in order that emergency motor vehicles which may be crossing State lines may not face unnecessary interference.

Transportation Plans For Civilian Defense

Transportation for casualties from scenes of disaster to hospitals and for injured persons or other patients removed from Casualty Receiving Hospitals to Emergency Base Hospitals are included in plans for emergency transport service during war disasters, described in recent Operations Letters issued by the Office of Civilian Defense.

Plans for local transportation are centered in the Transport Officer of the U. S. Citizens Defense Corps. It is the duty of the Transport Officer to maintain inventories of local equipment that can be used by the various emergency services of the Citizens Defense Corps, and he is responsible for organization, training, and supervision of volunteer drivers' units. Such equipment may include passenger cars, station wagons, motorcycles, ambulances, and other private vehicle. The instructions provide, however, that ambulances and cars or trucks used as improvised ambulances, with their drivers, should be assigned regularly to the Emergency Medical Service and be under its direction.

Through joint action of the Office of Defense Transportation and the Office of Civilian Defense, concurred in by the War and Navy Departments, local commercial motor vehicles, including taxicabs and trucks of small operators, which are now under the jurisdiction of the Office of Defense Transportation, have been released to and also are available to the Transport Officer for local service in case of war emergency. He may make use of such vehicles immediately, without application to the ODT.

For transport facilities needed outside the local area, such as might be required for evacuation of civilians or for transfer of injured persons to Emergency Base Hospitals in other cities or rural areas, the OCD and the ODT are cooperating in the organization of motor transport units in the larger common, contract, and private motor carriers of the critical areas of the country. These units, which will be trained in convoy service, will be provided by the ODT on request of the local Commander of the Citizens Defense Corps through the State Transport Officer and proper ODT district managers. ODT is at present developing an organization in the critical areas of the country under which its district managers will make contact with the local Transport Officers to make certain that each community is organized to function under the plan.

Operations Letter No. 114, issued March 3, which describes the above arrangements, urges cooperative planning between the Citizens Defense Corps and such agencies as the American Red Cross, the Women's Defense and Ambulance Corps, and local or State automobile associations or clubs, in order that several agencies may not seek to mobilize the same equipment and drivers independently, but may do so in cooperation. It is pointed out, for instance, that most local Red Cross chapters have permanent transportation committees to provide motor transport facilities for disaster relief. By cooperative planning, such facilities can be made available also to the Citizens Defense Corps.

BULLETIN BOARD

Ninetieth Annual Session

OFFICIAL CALL

According to the By-Laws, as amended at the 1940 session, the House of Delegates will convene at Raleigh in the Ball Room of Hotel Sir Walter, Monday afternoon, May 10, 1943, at 2:00 o'clock.

Donnell B. Cobb, President

Attest:
Roscoe D. McMillan, Secretary-Treasurer

HEADQUARTERS, HOTEL SIR WALTER
European Plan

Rates

Hotel Sir Walter:

Single Rooms—$3.00 to $6.00
Double Rooms—(Double Bed) $5.00 to $7.00
Double Rooms—(Twin Beds) $5.50 to $9.00
All rooms with baths

Carolina Hotel:

Single Rooms—$3.00, $3.25 and $3.50
Double Rooms—$5.50 to $6.00
All rooms with baths

Andrew Johnson Hotel:

Single Rooms (Without bath)—$1.75
(Connecting bath)—$2.25
(Private bath)—$2.50
Double Rooms (Without bath) (Double bed) —$3.00
(Connecting bath) (Double bed)—$4.00
(Private bath) (Double bed) —$5.00
Double Rooms (Without bath) (Twin beds) —$3.50
(Private bath) (Twin beds) —$5.00

Raleigh Hotel:

Single Rooms (Without bath)—$1.50
(With bath)—$2.00
Double Rooms (Without bath)—$3.00
(With bath)—$4.00

For Program of Auxiliary
See Auxiliary Section of April Issue.

RESUME OF PROGRAM

MONDAY, MAY 10, 1943

9:00 a.m. — Registration Booth Opens
1 - 6 p.m. — Registration of Auxiliary to the Medical Society (Hotel Sir Walter)
2:00 p.m. — House of Delegates of Medical Society (Virginia Dare Ball Room)
2:00 p.m. — Health Officers' Section of North Carolina Public Health Association (Manteo Room)
5:30 p.m. — Intermission, House of Delegates of Medical Society
8:00 p.m. — House of Delegates of Medical Society Reconvenes.

TUESDAY, MAY 11, 1943

7:30 a.m. — Officers' Breakfast, Medical Society (Manteo Room)
8:00 a.m. — Registration Booth Opens
9:30 a.m. — First General Session of Medical Society (Virginia Dare Ball Room)
10:30 a.m. — Executive Board Meeting, Auxiliary to Medical Society (Carolina Hotel)
12:30 p.m. — Wake Forest Medical Alumni Luncheon (Colonial Room)
Duke Medical Alumni Luncheon (Raleigh Room)
University of North Carolina Medical Alumni Luncheon (Manteo Room)
1:00 p.m. — Luncheon, Auxiliary to Medical Society (Carolina Hotel)
2:00 p.m. — Annual State Meeting, Auxiliary to Medical Society (Carolina Hotel)
2:30 p.m. — Section Meetings, Medical Society:
Section on Gynecology and Obstetrics (Raleigh Room)
Section on Surgery (Manteo Room)
Section on Practice of Medicine (Colonial Room)
Section on Public Health and Education (Roanoke Room)
7:00 p.m. — President's Dinner (Virginia Dare Ball Room)
10:00 p.m. — Annual Medical Society Ball (Virginia Dare Ball Room)

WEDNESDAY, MAY 12, 1943

8:00 a.m. — Registration Booth Opens
9:15 a.m. — Second General Session of Medical Society (Virginia Dare Ball Room)
12:00 m. — Conjoint Session, Medical Society and State Board of Health (Virginia Dare Ball Room)
12:30 p.m. — University of Pennsylvania Medical Alumni Luncheon (Raleigh Room)
Jefferson Medical College Alumni Luncheon (Colonial Room)
Medical College of Virginia Alumni Luncheon (Manteo Room)
2:30 p.m. — Section Meetings, Medical Society:
Section on Ophthalmology and Otolaryngology (Elizabeth Room)
Section on Pediatrics (Roanoke Room)
Section on General Practice of Medicine and Surgery (Virginia Dare Ball Room)
2:30 p.m. — Last Meeting of House of Delegates of Medical Society (Colonial Room)
5:00 p.m. — Third General Session, Medical Society (Virginia Dare Ball Room)

PROGRAM OF THE MEDICAL SOCIETY

Monday, May 10, 1943

9:00 a.m.—Registration Booth Opens

2:00 p.m.—First Meeting of the House of Delegates (Virginia Dare Ball Room)

Intermission at 5:30 p.m. to 8:00 p.m.

HEALTH OFFICERS' SECTION OF NORTH CAROLINA PUBLIC HEALTH ASSOCIATION
(Manteo Room)

Monday, May 10, 2:00 p.m.

Louise M. Perry, M.D., Asheville Health Department, Asheville—"A Health Department Eye Clinic".

L. D. Hagaman, M.D., Lenoir — "Observation on Poliomyelitis".

Wilfred N. Sisk, M.D., Asheville—"The Treatment of Pinworms".

William P. Richardson, M.D., District Health Officer, Orange-Person-Chatham Health District, and Mr. Albert Coats, Institute of Government, Chapel Hill—"Special Training Program of the O. C. D.".

Monday, May 10, 1943 (Cont'd.)

8:00 p.m.—House of Delegates Reconvenes (Virginia Dare Ball Room)

Tuesday, May 11, 1943

7:30 a.m.—Officers' Breakfast (Manteo Room)
8:00 a.m.—Registration Booth Opens

FIRST GENERAL SESSION
(Virginia Dare Ball Room)

Tuesday, May 11, 1943

9:30 a.m.—Call to Order, Roscoe D. McMillan, M.D., Chairman Committee on Arrangements.
Invocation—Dr. Charles H. Durham, Raleigh
Announcements—
Presentation of the President—

9:45 a.m.—President's Address—Donnell B. Cobb, M.D., Goldsboro

10:05 a.m.—Captain Waltman Walters (MC) USNR, Corona, California (Guest Speaker) "Treatment of War Casualties".

10:35 a.m.—Report of Committee on Award of Moore County Medal for Best Paper Read in 1942 Session and Presentation of Medal to E. P. Alyea, M.D., Durham, for his paper on "Castration for Carcinoma of the Prostate Gland".
Addison G. Brenizer, M.D., Chairman Charlotte
Russell O. Lyday, M.D., Greensboro
C. T. Smith, M.D., Rocky Mount

10:45 a.m.—Report of Obituary Committee:
C. A. Woodard, M.D., Chairman, Wilson
S. A. Saunders, M.D., Aulander
Forrest M. Houser, M.D., Cherryville

10:55 a.m.—Lieutenant-Colonel Worth B. Daniels, M.D., Fort Bragg, Chief of Medical Service—"Sulfadiazine in the Treatment of Meningococcic Meningitis". From Section on Practice of Medicine.

11:15 a.m.—C. Graham Reid, M.D., Charlotte — "Brucellosis". From the Section on Public Health and Education.

11:35 a.m.—The Honorable J. Melville Broughton, Governor of North Carolina—Message to the Physicians of North Carolina

12:15 p.m.—Adjournment

ALUMNI LUNCHEONS

Tuesday, May 11, 12:30 p.m.

Wake Forest — D. H. Bridger, M.D., President, Bladenboro (Colonial Room)

Duke University—Jay M. Arena, M.D., President, Durham (Raleigh Room)

University of North Carolina—C. E. Howard, M.D., President, Goldsboro (Manteo Room)

SECTION ON GYNECOLOGY AND OBSTETRICS

(Raleigh Room)

Tuesday, May 11, 2:30 p.m.

Paul W. Johnson, M.D., Winston-Salem, Chairman

Ivan M. Procter, M.D. and Kenneth Dickinson, M.D., Raleigh—"A Study of Labor at the Pelvic Outlet".

Frank R. Lock, M.D., Winston-Salem — "Post-Partum Sterilization; Indications and Advantages". (Before the Second General Session, Wednesday, May 12, 2:30 p.m.)

Captain Carl T. Javert, M.D., Goldsboro Technical School of the United States Army, Goldsboro—"A Combined Isometric and Stereoscopic Technique for Radiographic Study of the Obstetrical Patient".

Arthur Grollman, M.D., Winston-Salem—"Sterility".

R. A. White, M.D., Asheville—"Correction of Sterility with Oil Injections Under Pressure".

Thomas Leslie Lee, M.D., Kinston—"Excerpts of Obstetrics and Gynecology".

SECTION ON SURGERY

(Manteo Room)

Tuesday, May 11, 2:30 p.m.

J. F. Robertson, M.D., Wilmington, Chairman

W. H. Sprunt, M.D. and James A. Harrill, M.D., Winston-Salem—"The Diagnosis and Treatment of Cardiospasm".

Lenox D. Baker, M.D., Durham—"Fractures of the Patella". (Before the Second General Session, Wednesday, May 12.)

T. C. Bost, M.D., Charlotte—"An Experimental Comparison of Certain 'Skin-Sterilizing' Agents".

J. Watts Farthing, M.D., Wilmington—"Presacral Sympathectomy".

Donald S. Daniel, M.D., Richmond, Va.—"Carcinoma of the Large Intestine".

Grace G. Jones, M.D., Charlotte—"Retroperitoneal Position of the Ascending Colon".

SECTION ON PRACTICE OF MEDICINE

(Colonial Room)

Tuesday, May 11, 2:30 p.m.

E. J. Wannamaker, M.D., Charlotte, Chairman

Richard S. Lyman, M.D., Durham, Professor of Neuropsychiatry, Duke University School of Medicine—"Some Principles of Diagnosing Malingering and Hysteria". Discussion to be led by Archie A. Barron, M.D., Charlotte.

Arthur A. Grollman, M.D., Winston-Salem, Research Professor of Medicine, Bowman Gray School of Medicine of Wake Forest College—"Clinical Application of Recent Studies in Hypertension". Discussion to be led by Wingate M. Johnson, M.D., Winston-Salem.

Major Philip W. Brown, M.D., Rochester, Minnesota, Associate Professor of Medicine, University of Minnesota, Consultant in Gastroenterology, Mayo Clinic—"Amebiasis". Discussion to be led by C. Graham Reid, M.D., Charlotte.

W. Reece Berryhill, M.D., Chapel Hill, Dean and Professor of Clinical Medicine, University of North Carolina School of Medicine—"Atypical Pneumonia of Unknown Etiology". Discussion to be led by Captain W. H. Roper, M.D., Fort Bragg.

James P. Hendrix, M.D., Durham, Associate Professor of Internal Medicine, Duke University—"Harmful Effects of the Sulfonamide Drugs". Discussion to be led by Edward McG. Hedgpeth, M.D., Chapel Hill.

Lieutenant-Colonel Worth B. Daniels, M.D., Fort Bragg, Chief of Medical Service—"Sulfadiazine in the Treatment of Meningococcic Meningitis". (Before the First General Session, Tuesday, May 11.)

SECTION ON PUBLIC HEALTH AND EDUCATION

(Roanoke Room)

Tuesday, May 11, 2:30 p.m.

E. H. Hand, M.D., Charlotte, Chairman

N. Thomas Ennett, M.D., Greenville, Health Officer of Pitt County—"Can Organized Medicine Alone Stay the Tide Towards Socialized Medicine?" Discussion to be led by S. B. McPheeters, Goldsboro, Health Officer of Wayne County.

Wilfred N. Sisk, M.D., Asheville, Health Officer of Buncombe County—"The Unsuspected Prevalence of Intestinal Parasites in North Carolina". Discussion to be led by William T. Freeman, M.D., Asheville.

William L. Fleming, Chapel Hill, Division of Public Health, School of Medicine—"Intensive Methods of Anti-Syphilitic Treatment". Discussion to be led by R. H. McDowell, M.D., Durham, Venereal Disease Control Officer of the Durham City-County Health Department.

A. C. Bulla, M.D., Raleigh, Health Officer of Wake County—"Looking Back While Marching On". Discussion to be led by E. R. Hardin, M.D., Health Officer of Robeson County, Lumberton.

C. Graham Reid, M.D., Charlotte—"Brucellosis". (Before First General Session, Tuesday morning, May 11.)

Lucy E. Morgan, Ph.D., Raleigh, Health Education Consultant, U. S. Public Health Service—"Communities Awake". Discussion to be led by J. Roy Hege, M.D., Raleigh, Director of Defense Activities.

PRESIDENT'S NIGHT

(Virginia Dare Ball Room)

Tuesday, May 11, 1943

(Dress—Optional)

7:00 p.m.—Banquet—Paul H. Ringer, M.D., Asheville, Toastmaster

Invocation—Wingate M. Johnson, M.D., Winston-Salem

Presentation of President's Jewel to Donnell B. Cobb, M.D., Goldsboro by James W. Vernon, M.D., Morganton, President-Elect.

Humorous Address—H. E. Spence, Ph.D., Duke University

Program by Wallace—The Magician, Durham

10:00 p.m.—President's Ball.

Wednesday, May 12, 1943

8:00 a.m.—Registration Booth Opens.

SECOND GENERAL SESSION

(Virginia Dare Ball Room)

Wednesday, May 12, 1943

9:15 a.m.—V. K. Hart, M.D., Charlotte—"Some Rhinolaryngological Tumors of Unusual Clinical Interest". From Section on Ophthalmology and Otolaryngology.

9:35 a.m.—Lenox D. Baker, M.D., Durham—"Fractures of the Patella". From Section on Surgery.

9:55 a.m.—J. LaBruce Ward, M.D., Asheville—"For Ways That Are Dark and Tricks That Are Vain". From Section on Pediatrics.

10:15 a.m.—Frank R. Lock, M.D., Winston-Salem—"Post-Partum Sterilization; Indications and Advantages". From Section on Gynecology and Obstetrics.

10:35 a.m.—Lieutenant Colonel Charles W. Mayo (MC) USA, Charleston, S. C. (Guest Speaker)

"One Stage Combined Abdomino-Perineal Resection for Malignancy of the Lower Colon, Rectosigmoid and Rectum". (Color Movie).

11:15 a.m.—Elias S. Faison, M.D., Charlotte—"Interstitial Nephritis". From Section on General Practice of Medicine and Surgery.

11:35 a.m.—Election of two members of State Board of Health.

CONJOINT SESSION

(Virginia Dare Ball Room)

Wednesday, May 12, 12:00 m.

S. D. Craig, M.D., Winston-Salem, President of State Board of Health, will preside over this meeting of the Medical Society of the State of North Carolina and the State Board of Health.

ALUMNI LUNCHEONS

Wednesday, May 12, 12:30 p. m.

University of Pennsylvania — R. L. McGee, M.D., President, Raleigh (Raleigh Room)

Jefferson Medical College—H. H. Bradshaw, M. D., President, Winston-Salem (Colonial Room)

Medical College of Virginia — B. C. Willis, M.D., President, Rocky Mount (Manteo Room)

SECTION ON OPHTHALMOLOGY AND OTOLARYNGOLOGY

(Elizabeth Room)

Wednesday, May 12, 2:30 p.m.

W. Banks Anderson, M.D., Durham, Chairman

W. Banks Anderson, M.D., Durham, Chairman's Address—"Unilateral Exophthalmus as a Diagnostic Problem".

LeRoy M. Polvogt, M.D., Johns Hopkins Hospital, Baltimore, Md.—"Recent Advances in Chemotherapy as Applied to Otolaryngology".

V. K. Hart, M.D., Charlotte—"Some Rhinolaryngological Tumors of Unusual Clinical Interest" (Lantern Slides.) (Before Second General Session, Wednesday, May 12.)

Robert Reeves, M.D., Durham — "Ophthalmological and Otolaryngological Lesions".

Nash Herndon, M.D. and William Allan, M.D., Winston-Salem—"Field Experiences with Hereditary Blindness and Deafness".

Captain Ralph Arnold, Medical Corps, Fort Bragg—Title unannounced.

A. J. Ellington, M.D., Burlington—"External Ear Infections".

SECTION ON PEDIATRICS

(Roanoke Room)

Wednesday, May 12, 2:30 p.m.

J. R. Ashe, M.D., Charlotte, Chairman

J. LaBruce Ward, M.D., Asheville—"For Ways That Are Dark and Tricks That Are Vain". (Before the Second General Session Wednesday, May 12.)

J. W. Crumpler, M.D., Rocky Mount—"The Sulfonamides in the Treatment of Hemorrhagic Nephritis".

Frank H. Richardson, M.D., Asheville—"Fried Foods and the Child".

E. V. Turner, M.D., Wilmington — "Streptococcal Disease in Infancy and Childhood".

Sam F. Ravenel, M.D. and Jean McAlister, M.D., Greensboro—"The Complications of Acute Hemorrhagic Nephritis".

Angus McBryde, M.D. and Frank Ledesma-Diaz, M.D., Durham—"Typhoid Fever in Children".

Robert B. Lawson, M.D., Winston-Salem—"Acidosis in the Newly Born".

SECTION ON GENERAL PRACTICE OF MEDICINE AND SURGERY

(Virginia Dare Ball Room)

Wednesday, May 12, 2:30 p.m.

Ben Gold, M.D., Shelby, Chairman

C. A. Anderson, M.D., Burlington—"Mineral Oil by Mouth and by Bowel".

Julian M. Ruffin, M.D., Durham—"Deficiency Diseases".

Frank B. Marsh, M.D., Salisbury—"Peripheral Circulatory Failure; Its Mechanism and Treatment in Medical Disorders".

M. A. Pittman, M.D., Wilson—"What the General Practitioner Should Know About Back Injuries".

Elias S. Faison, M.D., Charlotte—"Interstitial Nephritis". (Before the Second General Session Wednesday, May 12.)

E. McG. Hedgpeth, M.D., Chapel Hill—"Spontaneous Pneumothorax: Diagnosis and Prognosis".

John R. Williams, M.D., Winston-Salem—"The Etiology and Classification of Hypertension".

Wednesday, May 12, 1943

2:30 p.m.—Last Meeting of the House of Delegates (*Colonial Room*)

THIRD GENERAL SESSION

(Virginia Dare Ball Room)

Wednesday, May 12, 1943

5:00 p.m.—Report of House of Delegates.

5:15 p.m.—Unfinished Business.

5:20 p.m.—New Business.

5:30 p.m.—Installation of President James W. Vernon, M.D. and President-Elect by retiring President Donnell B. Cobb, M.D.

5:40 p.m.—Remarks by President and President-Elect.

5:50 p.m.—Adjourn Sine Die.

COMMERCIAL EXHIBITORS

A. S. Aloe Company, St. Louis, Mo., Space No. 34

American Hospital Supply Corporation, Chicago, Ill., Spaces No. 49 and 50

American Optical Company, Southbridge, Mass., Space No. 8

The Borden Company, New York City, Space No. 13

Camel Cigarettes, New York City, Spaces No. 26, 27, 28, and 29

Carolina Surgical Supply Company, Raleigh, Spaces No. 23 and 24

Charles C. Haskell & Company, Inc., Richmond, Va., Space No. 17

Ciba Pharmaceutical Products, Inc., Summit, N. J., Space No. 48

Doak Company, Inc., Hyattsville, Md., Spaces No. 9 and 10

Doho Chemical Company, New York City, Spaces No. 18 and 19

Eli Lilly and Company, Indianapolis, Ind., Spaces No. 15 and 16

Endo Products, Inc., Richmond Hill, N. Y., Space No. 2

Holland-Rantos Company, Inc., New York City, Space No. 14

John Wyeth & Brother, Inc., Philadelphia, Pa., Spaces No. 43 and 44

Lederle Laboratories, New York City, Space No. 7

Mead Johnson and Company, Evansville, Ind., Spaces No. 3 and 4

Ortho Products, Inc., Linden, N. J., Space No. 35

Philip Morris & Company, Ltd., New York City, Spaces No. 41 and 42

Picker X-Ray Corporation, New York City, Spaces No. 36 and 37

Powers & Anderson, Inc., Winston-Salem, N. C. and Norfolk, Va., Spaces No. 51 and 52

S & H X-Ray Corporation, Charlotte, N. C., Space No. 47

Sharpe & Dohme, Inc., Philadelphia, Pa., Spaces No. 32 and 33

Smith, Kline and French Laboratories, Philadelphia, Pa., Spaces No. 11 and 12

Southeastern Optical Company, Richmond, Va., Spaces No. 20 and 21

E. R. Squibb & Sons, New York City, Spaces No. 5 and 6

Tablerock Laboratories, Greenville, S. C., Space No. 22

Valentine's Meat Juice Company, Richmond, Va., Space No. 1

William S. Merrell Company, Cincinnati, Ohio, Spaces No. 45 and 46

Winchester Surgical Supply Co., Charlotte, N. C. and Winchester-Ritch Surgical Co., Greensboro, N. C., Spaces No. 38, 39 and 40

SCIENTIFIC EXHIBITS

From American Medical Association

"An Industrial Health Program for a County Medical Society"

"Dietary Deficiency Diseases"

From Bowman Gray School of Medicine of Wake Forest College

"Field Studies in Hereditary Diseases"—William Allan, M.D., Winston-Salem, N. C.

"Recent Developments in Thoracic Surgery"—James F. O'Neill, M.D. and H. H. Bradshaw, M.D., Winston-Salem and M. D. Bonner, M.D., Jamestown.

From Duke University School of Medicine

(Subjects Unannounced)

From University of North Carolina School of Medicine

(Subjects Unannounced)

NEWS NOTES FROM THE STATE BOARD OF HEALTH

One of the most encouraging signs of the times is the sustained downward trend in infant mortality. From January 1 to April 1 there were 1,150 deatns in North Carolina among babies under a year old. This figure represents a large group of infants, to be sure—**too many** to be lost during the first year of life—but during the corresponding period in 1942, the total was 1,340. These figures represent a decline of 190 in favor of 1943.

Moreover, there is a sustained downward trend in the infant **death rate**, which, for the first quarter of 1943, was 48.2, contrasted with 63 for the first three months of last year. The infant mortality rate represents the number of babies under a year old who die, for every **one thousand** live births.

What makes this downward trend all the more encouraging is the fact that it is being sustained in the face of one of the most spectacular increases in the number of births witnessed in recent years. Since January 1, there have been born in the State of North Carolina, and reported to the State Board of Health, 23,788 babies, as compared with 21,301 during the same period last year. The birth rate for the quarter just ended was 25.7, as compared with 23.3 last year.

For the period under consideration, the maternal death rate was 3.3. Last year it was 3.9 per one thousand live births.

There has also been a decrease in the total **number of deaths** among groups of all ages and in the **general death rate**, which was 8.3 the first three months of 1943, against 8.7 the corresponding period last year. So far this year, there have been reported in North Carolina 7,656 deaths, 300 fewer than occurred during the first quarter of 1942.

But there is a black spot on the health picture in North Carolina which cannot and should not be overlooked, because an enlightened public has the power to remove it. Deaths from diphtheria numbered 16 during January, February and March—when there should not have been a single such death, and very probably there would not have been, if the compulsory immunization law, passed in 1939, had been strictly complied with. This law provides that every child shall be immunized during the first year of life, and before being admitted to any school, public, private or parochial.

There were only 10 diphtheria deaths in North Carolina during the first quarter of 1942, as compared with the 16 above referred to, which already have occurred this year.

Here is what the North Carolina law actually says:

"Sec. 3. (a). It shall be incumbent upon the parent or parents or guardian of such child to present said child to a regularly licensed physician in the State of North Carolina, of his or her or their own choice, and request said physician to render this professional service. If the said parent or parents or guardian of such child are unable to pay for the services of a private physician of his or her or their own choice, they shall then present such child to the County Health Officer in the county in which such child resides and ask that an immunizing dose of prophylactic diphtheria agent which meets the standard approved by the United States Public Health Service for such biologic products, be administered, and such County Health Officer shall administer such treatment.

"Sec. 5. Any wilful violation of this act, or any part thereof, shall constitute a misdemeanor and shall be punishable at law by a fine of not more than fifty dollars ($50.00) or by imprisonment for not more than thirty (30) days, in the discretion of the court."

So far this year there have been only 361 deaths in the state from all forms of tuberculosis, which formerly was the No. 1 killer. This figure (361) compares with 419 for the corresponding period of 1942.

Another disease that is being successfully combated is pneumonia, which resulted in 617 deaths during January, February and March, contrasted with 728 such deaths a year ago.

A wholesome sign is the downward trend in the number of deaths attributable to pellagra. There have been only 54 such deaths so far this year, as compared with 79 during the first quarter of 1942.

News Notes From the North Carolina Tuberculosis Association

The new address of the North Carolina Tuberculosis Association is 517 Commercial Building on the corner of Martin and Wilmington Streets, Raleigh.

* * * *

The Annual Meeting of the Board of Directors of the North Carolina Tuberculosis Association will be held in the Roanoke Room of the Sir Walter Hotel on Monday afternoon, May 10, at five o'clock.

* * * *

The North Carolina Tuberculosis Association will hold an Institute for Tuberculosis Workers in Raleigh during the week of May 31-June 5. This Institute will be primarily for lay workers in the tuberculosis movement. Some of the most prominent authorities in tuberculosis both from the State and Nation will lecture at this Institute. Membership in the Institute will be by invitation only and invitations will be issued to not more than fifteen workers.

* * * *

The North Carolina School-Health Coordinating Service announces that it will hold four Child Health Conferences in North Carolina Colleges during the summer of 1943. Fellowships will again be provided by the Health Coordinating Service to cover one-half of the actual expenses. Any of the professional personnel of the local health and education departments is eligible for a fellowship, both white and colored. The demand for these fellowships is far greater than the supply. For this reason, application blanks may be secured from the North Carolina Tuberculosis Association or from Dr. W. P. Jacocks, Director Child Health Conferences, Box 2091, Raleigh, N. C.

Among the Industrial policy-holders of the Metropolitan Life Insurance Company, the tuberculosis death rate declined from 42.8 in 1941 to 41.7 in 1942. This is the first figure available with reference to the 1942 death rate from tuberculosis in the United States as a whole.

* * * *

The National Tuberculosis Association Bulletin in its April issue, expresses genuine appreciation for the work done by students in the School Press Project co-sponsored by the Columbia Scholastic Press Association and the National Tuberculosis Association. School publications in twenty-four states participated and out of this number 212 publications were rated as meriting certificates of award. Two Junior High Schools—The Franklin Reporter of Louisburg and the Spot Light of East Durham Junior High School—and four Senior High Schools —the Ki-Hi of Kinston; Pine Whispers of Winston-Salem with articles contributed from James A. Gray, John W. Hanes and Richard J. Reynolds High Schools—were among these winners of Awards. We were pleased to see three of these articles quoted in the current National Tuberculosis Bulletin.

* * * *

The total amount raised in the 1942 Seal Sale reached an all-time high of $123,411.71. This is an increase of $30,331.48 over 1941 or 32%. The sale for 1941 was $93,080.23. The 1942 goal set for North Carolina was $110,000.

News Notes From the Bowman Gray School of Medicine of Wake Forest College

Dr. Tinsley R. Harrison, Professor of Medicine, addressed the Whitehead Society at the University of North Carolina Medical School on March 31. His subject was "Cardiac Dyspnea".

* * * *

Dr. Arthur Grollman, Research Professor of Medicine, spoke at the Marine Hospital in Norfolk on April 8 on the subject, "Recent Studies in Hypertension".

Forsyth County Medical Society

The Forsyth County Medical Society held a dinner meeting on April 13 at the Robert E. Lee Hotel in Winston-Salem. Dr. K. M. Grimson of Duke University was guest speaker, and his subject was "Neurological Aspects of Hypertension". Dr. Frank R. Lock of the Bowman Gray School of Medicine presented a case report.

National Foundation for Infantile Paralysis

The launching of another major attack on the problems concerning the spread of infantile paralysis was made known when Basil O'Connor, presipresident of The National Foundation for Infantile Paralysis, announced that the National Foundation had made a five-year grant, totaling $150,000, to the Yale University School of Medicine, New Haven, Connecticut, for the establishment of the Yale Poliomyelitis Study Unit. The term of the grant will conclude June 30, 1948.

Recommendations for a Venereal Disease Control Program in Industry

Report of the
Advisory Committee on the Control of
Venereal Diseases
Otis L. Anderson, Chairman

In order to assemble current authoritative information and to formulate basic principles applicable to a program of venereal disease control in industry, the Surgeon General has appointed an Advisory Committee to the United States Public Health Service. This Committee has outlined the objectives of such a program as:

A. Medical and Public Health:
   1. To find and refer for proper medical management all cases of venereal diseases among workers in industry.
   2. To establish equitable policies for the employment of applicants and continuation of services of employees who have venereal diseases.
   3. To coordinate the community and industrial venereal diseases control programs.

B. Employee:
   1. To improve the physical condition of employees.
   2. To reduce the number of workdays lost through illness or injury.
   3. To provide job placement.
   4. To prolong and increase the earning power of employees.

C. Employer:
   1. To reduce compensation costs.
   2. To lessen work interruptions and labor turnover.
   3. To enhance production by increasing the efficiency of workers.
   4. To minimize personnel problems.

In order to assure agreement on all phases of fundamental policy, the committee recommends that certain agencies be consulted in carrying out this program: the State labor department, industrial commission or similar department of State government; the appropriate committee of the State medical society; the association representing employers; the labor organizations; appropriate voluntary health and welfare associations.

Responsibility for the administration of the program should be shared by the industrial hygiene and venereal disease divisions of the State health department. The program should not be inaugurated without a complete educational program. The employee should be convinced that adequate treatment protects both his health and his ability to earn a living, and the employer that not all cases of venereal disease are infectious, through an educational program before venereal disease control measures are introduced.

In order that the control program may be effective, preemployment examinations should be mandatory for all workers. Laboratory tests for syphilis and gonorrhea should be made a part of the periodic, reemployment or "return from illness" physical examinations which are the policy of the industry. The interval between examinations should under no circumstances be more than three years.

It is of utmost importance that the results of the medical examination be considered confidential between the worker and the medical staff. Information should be furnished to others only with the consent of the individual concerned or, failing this, on legal advice. The medical staff should make proper recommendations to the management as to the physical fitness of the employee for work. When the usual clinical record is kept in an open file, venereal disease forms should be filed in the medical departments for the use of the medical staff only.

There is no reason for denying employment to an applicant or for discharging an employee because an examination has revealed evidence of syphilis or gonorrhea, provided:

1. That the employee agrees to place himself under competent medical management;
2. That, if the disease is in the infectious stage, employment should be delayed or interrupted until such time as a noninfectious state is established through treatment and open lesions are healed;
3. That when syphilis exists in a latent stage, employment should not be delayed nor interrupted;
4. That employment may be deferred or denied when the individual is an industrial hazard;
5. That occupational readjustments of employees be made of individuals developing disabling manifestations;
6. That workers with syphilis in any of its stages be excluded from areas where there is exposure to chemicals which may produce toxic reactions, and those having cardiovascular syphilis or neurosyphilis should not be exposed to physiologic stresses;
7. That workers with gonorrhea should be allowed to work only under special medical observation during the administration of sulfonamide drugs.

The applicant or the employee whose examination reveals evidence of a venereal disease should be called to the industrial physician's office for a conference. He should be instructed as to the nature of the disease which he has in order that he may cooperate intelligently with the requirements of the program. He should be referred to a reputable source for medical attention and be furnished with a letter directed to his physician stating the results of the examination and what is expected of the employee as to regularity of treatment if he is to be employed. The industrial physician should receive a record of treatment at about monthly intervals. The names of individuals who have neglected or refused treatment should be turned over to the health department for appropriate action in bringing them back to treatment.

The plant physician making a tentative diagnosis of communicable syphilis or gonorrhea should without delay acquaint the appropriate health authority with the facts.

New G-U Analgesic and Antiseptic Introduced by Squibb

A new analgesic and antiseptic for use in genitourinary conditions has been added to the line of E. R. Squibb & Sons under the name, "Cajandol". A preparation of 5 per cent oil of cajeput dissolved in peanut oil, with 0.1 per cent propylparahydroxybenzoate as preservative, Cajandol was developed at the Brady Urological Institute, Johns Hopkins Hospital, and has been in use there during the past several years.

Clinical experience has shown that Cajandol alleviates pain and distress due to instrumentation and fulguration. It is also beneficial in many types of acute and chronic cystitis and other pathologic conditions of the bladder.

In treating these conditions, 10 cc. to 15 cc. of Cajandol are instilled into the bladder through a catheter at daily or bi-weekly intervals. In a few cases, Cajandol has been injected up the ureter during the use of the Councill stone extractor and has facilitated withdrawal of this instrument when there has been difficulty due to spasm of the ureter.

Cajandol is supplied in one-pint bottles only.

AUXILIARY

The biography of an eminent North Carolina doctor is presented each year by the Auxiliary to the Medical Society of the State of North Carolina to the Southern Medical Lending Library. This year we are privileged to present a memoir of the late Dr. Thomas Williams Mason Long, by his friend Judge R. Hunt Parker. Copies of this work will also be presented to the medical libraries of Duke University, the University of North Carolina and the Bowman Gray School of Medicine.

MRS. JOHN R. RAY
Research Chairman

DR. THOMAS WILLIAMS MASON LONG: A MEMOIR

By his friend R. HUNT PARKER

Thomas Williams Mason Long was born at Longview, Northampton County, North Carolina, on January 14, 1886. His parents were Lemuel Mackinnie and Bettie Gray (Mason) Long. Whatever might be his profession or work in life, the blood of his fathers marked him as one destined for public affairs. Through his father he was a lineal descendant of the illustrious Willie Jones of Halifax, Revolutionary leader and trusted lieutenant of Jefferson, an aristocratic democrat, a liberal rich man, a consummate politician, and "a man the object of more hatred and more adoration than has ever since lived" in North Carolina. His mother's father was Capt. Thomas W. Mason, many times a member of the General Assembly, Democratic candidate for Lieutenant Governor in 1896, and nominee of the Democratic caucus for U. S. Senator in 1895. Josephus Daniels, a close friend, described him as "a Chevalier Bayard if ever there was one; a man of rare eloquence," who "believed in everybody;" who "loved everybody."

Tom Long's widowed mother with her four sons and one daughter lived with her father at Longview. In those days before automobiles and movies and radio, when life was more stately and leisurely, sessions of superior court were gala occasions. Witnesses, suitors, jurors and lawyers gathered for a two weeks' stay at the county seat, mingling good fellowship with the trial of cases and the discussion of public matters. Only those who lived then know the friendship that such conditions brought to brethren of bench and bar. Captain Mason was the most beloved figure of the Northampton bar, and during court terms his home was filled with lawyers and judges. Tom Long revelled in this atmosphere of wit and humor and rare comradeship, and sat enthralled as these gifted men planned great political battles to rid North Carolina of misrule, and to lead their people into broad sunlit uplands of clean government, public improvements, public education and a fuller opportunity for the average man. His inherited instinct for public affairs then and there crystallized into a determination, that at times approached crusading zeal, to fight for the betterment of the average man—a determination that lasted as long as life. The memory of those days and the example of his grandfather's stainless life fashioned his career.

Tom Long was educated at home by private tutors, at the Petersburg Academy, and at V.P.I. In 1903 he entered the medical school of the University of North Carolina. In 1905 he transferred to the University College of Medicine, Richmond, Virginia. Owing to a protracted illness from typhoid fever he was out of medical school for a year, and received his degree in June, 1908. The same year he received his license to practice medicine in North Carolina. After an internship at Petersburg, Virginia, and a brief practice in Garysburg, North Carolina, near the place of his birth, he came in 1910 to Roanoke Rapids, which was his home until his death. Soon after settling there he married Maria Greenough Burgwyn, the daughter of an old and distinguished family of Northampton County.

Roanoke Rapids began when a cotton mill was built about 1895 on the banks of the Roanoke River. In the beginning it was a small cotton mill village, and even today, when it has a population of over 9,000 people, the majority of its citizens are employed by the textile mills. As in all the section of northeastern North Carolina lying adjacent to the banks of the Roanoke River, the people of this town were plagued with recurrent spells of malarial fever. All who could afford to, left during the summer, and returned only after a hard frost. Those who had to remain got through the summer as best they could with heavy doses of quinine and calomel, and all knew the shaking ague and pallid countenances of the plague that sapped the strength of imperial Rome. Then it was frequently said that Roanoke Rapids was a death trap. Such a problem challenged all the skill and learning of Tom Long.

He familiarized himself with the work of Doctors Carlos Finlay, Aristides Agramonte, James Carroll, Jesse W. Lazear and Walter Reed, who planned and directed in Cuba the experiments which have given man control over the dreaded peril, yellow fever. He knew that only the splendid sanitation work of General William C. Gorgas, carrying out the discoveries of the illustrious Walter Reed and his associates, made possible the cutting of the Panama Canal along the forty mile stretch of sweltering miasma, in which yellow fever and malaria, disease and death stalked in a hundred forms. He read the romatic story of the discovery that yellow fever was propagated by a mosquito, the Stegomyia, and malaria by the Anopheles, quite different in its habits. He learned that warfare against the Anopheles mosquito consisted mainly of oiling or draining stagnant waters, cutting away all vegetable growth within a radius of 200 yards of every human habitation, and breeding and disseminating larvae-eating minnows. Tom Long knew that he could eradicate malaria in Roanoke Rapids as Dr. Gorgas did in the Canal Zone. He threw into this fight all his fine powers of personality and persuasion, and obtained the cooperation of the public officials in a campaign for mosquito control. It was the first such effort in this section, and succeeded in transforming a pestilential spot of malaria into the healthiest town on the banks of the Roanoke. This achievement made Tom Long a marked man in his profession, and is a truer monument to his service than a thing of marble or granite.

In 1910 there was no hospital in Roanoke Rapids, in the county or in its immediate section. The pay of cotton mill operatives was pitifully small. The cost of hospitalization and surgery was a grievous burden. To lighten this burden and to bring adequate medical, surgical and hospital treatment to the laboring people of his town became Tom Long's ambition. In 1912 he, together with Drs. H. C.

Irwin and E. H. Atkins, founded the Roanoke Rapids Hospital, and in 1918 he was the foremost person in the construction of the present hospital and training school for nurses, of which he was president of the board of directors from 1912 to 1931, and a director until his death. The erection of a hospital did not solve the problem of placing medical and surgical service within the ability of the poor man to pay. In conjunction with the managership of the manufacturing plants there and their employees he devised a plan whereby a small deduction should be made each week from the pay of each employee for medical attention and hospitalization for the employee and every member of his family. Such plan met with instant success, and has been continued since. To have brought hospitalization and medical services within the reach of several thousand people of meager means for a quarter of a century is an achievement worthy of remembrance.

Tom Long never specialized, but was always a general practitioner. In addition to his practice with the employees of the manufacturing companies he carried on a large general practice. Honors in his profession were heaped upon him. He was Chairman of the Board of Directors of the North Carolina Sanatorium from 1922 to 1931; a member of the State Board of Medical Examiners from 1926 to 1932; a director of the State Hospital, Raleigh, from 1918 to 1920; and Secretary-Treasurer of the Medical Society of North Carolina from 1937 to his death.

A man of his intellectual power and force could not restrict himself to his profession alone. He said with the great Roman poet: "Homo sum, humani nihil a me alienum puto." His large simplicity of character and natural magnetism made him a born leader of men. In business he became director, vice-president and president of the First National Bank, a director of the Roanoke Mills Company, a director of the Rosemary Bank and Trust Company, and president of two drug store corporations. In the public life of the town he was chairman of the town board of commissioners from 1915 to 1922, Mayor from 1922 to 1930, and a trustee of the graded school district from 1915 to 1930. And all this while he was a dominant political power in his county and section.

In his private life he was blessed with the loyalty and companionship and love of a devoted wife. Their three daughters and two sons were to him a constant joy and happiness, and to them his life is an inspiration. His wife and children, his mother, three brothers and a sister survive.

Through no fault of his own, financial reverses came. As success left him calm—he had had so much of it—, so these reverses did not depress him. The next morning found him once more facing the world with serene and undaunted brow and "courage never to submit or yield." Now began his work in the General Assembly of North Carolina, which did so much to advance the cause of public health in our state. He was a member of the House during part of the session of 1931 and a member of the Senate in the sessions of 1933, 1937, 1939 and part of 1941. He successfully guided through the 1939 session three measures hailed as outstanding in the health laws of the nation. They required persons wishing to be married to pass health tests, all expectant mothers to take blood tests for syphilis, and all children to be immunized for diphtheria. In that session he also successfully sponsored legislation to appropriate $250,000.00 for the establishment of a sanatorium in eastern North Carolina for the treatment of tuberculosis. In the 1941 session this appropriation was increased to $600,000.00 One of these buildings should bear his name as a memorial to his achievements for public health in North Carolina. In the 1941 session he had an engagement to breakfast with the Governor of North Carolina to discuss legislation for public health on the morning of February 4. He died on the night of February 3.

While his profession marked him out for leadership in public health, he by no means confined his efforts to such legislation. His interests were as varied as the business of the General Assembly, for he stood at the heart of life and his activities embraced everything that interested his fellows. He was preeminently a social being recognizing his duty to others. The **News and Observer** in an editorial upon his death accurately summed up the unique place Tom Long had achieved for himself there. "It will be many sessions before a legislator will be found anywhere in the state who will fill the niche which Dr. Long had carved for himself in the legislative life of the state. Naturally, the physicians of the state looked to him as a spokesman of their view point in legislative matters. What was less usual was that lay members of the senate had come to regard him as a final authority on matters touching the medical profession, realizing that while he was faithful to the view point of his profession he never permitted himself to lose sight of the interest of the whole people of the state." This editorial might have added that he won this unique place by devoted loyalty to the land of his birth and a wide practical sagacity, which enabled him to move by slow degrees and to conciliate divergent interests by sheer tact and good will.

Tom Long fought some bitter political battles, and when he gave his heart and reason to a cause he never counted the cost. The throes of an earthquake could not shake him from the performance of his pledged word or from loyalty to a friend. When he was convinced he was right—and he was a man of rare intelligence—, not all the combined forces of wealth or society or the multitude could for an instant cause him to swerve one hair's breadth from his course. He was one

> Who comprehends his trust, and to the same
> Keeps faithful with a singleness of aim;
> And therefore does not stoop, nor lie in wait
> For wealth, or honors, or for worldly state;
> Whom they must follow; on whose head must fall,
> Like showers of manna; if they come at all.

This quality and his love and understanding of the trials and sorrows and ambitions of poor people, so many of whom were his patients and friends, made Tom Long the ablest champion of the average man and woman in the public affairs of North Carolina during his days as a senator.

On the afternoon of February 3, 1941, he attended a meeting of the Senate Finance Committee. Feeling indisposed, he left and entered Rex Hospital. Almost immediately he suffered a severe heart attack. As his spirit which drew from out the boundless deep was turning again home, he could say with Mr. Valiant-for-Truth: "My sword I give to him that shall succeed me in my pilgrimage, and my courage and skill to him that can get it. My marks and scars I carry with me, to be a witness for me that I have fought His battles Who now will be my rewarder." At 6:10 p.m. he was dead. At 8:00 p.m. both Houses of the General Assembly met. At the request of the Lieutenant Governor the chaplain read to a hushed Senate the Twenty-Third Psalm. Governor Harris then said: "It is with profound sorrow that the chair has the distressing duty to announce the passing of Senator Thomas Williams Mason Long. Without

reflecting on any member of the senate Dr. Tom—as he was affectionately known—was the best loved member of this body." Tributes were paid to him in the House. And then without the transaction of business both Houses adjourned in his memory.

When the notice of his death was flashed to his home hundreds of strong men and women wept unashamed, saying, "I have lost my best friend." Beside his open grave in a little country churchyard in his native county stood the Governor, the General Assembly in a body, and thousands of his friends. As his casket was carried from the church the audible sobbing of men and women throughout the vast crowd was a tribute of love and affection such as "a sceptered king or a laurelled conqueror" might have envied.

Many centuries ago a Greek physician wrote: "I was Pausanias, physician, reported to have died of natural disease (but I tell you) harried to death by sick people asking aid. In bodyless Elysian Fields, however, where the one medicine has already been given, I sleep the night through." The world has long ago decided that doctors have no working hours which anybody is bound to respect, and nothing except a doctor's extreme bodily illness will excuse him from refusing to help a person who thinks he may need his help at any hour of the day or night.

These exacting demands of his profession came to Tom Long in full and rounded measure. Day and night for a third of a century he answered every call. It mattered nothing whether the patient could pay, whether the way was long and cold, whether he was worn by a sleepless night; when duty called, he ever answered, "I am here." His cheer, his optimism, his faith, his genuine friendship made him in every home the beloved physician. At many a pain-racked bed, at birth, at death, he was more than the physician, he was the family's comforter and friend. No one will ever know in how many humble homes he gave medicine and food from his own means. To his patients, he gave his all, wearing himself out in their service, and to him they gave their loyalty and love and gratitude. His life exemplified Robert Louis Stevenson's description of a physician: "The physician is the flower of our civilization; and when that stage of man is done with, and only remembered to be marvelled at in history, he will be thought to have shared as little as any in the defects of the period, and most notably exhibited the virtues of the race. Generosity he has, such as is possible to those who practice an art, never to those who drive a trade; discretion, tested by a hundred secrets; tact, tried in a thousand embarrassments; and what are more important, Heraclean cheerfulness and courage. So it is that he brings aid and cheer into the sick room, and often enough, though not so often as he wishes, brings healing." By common consent Dr. John Brown, of Edinburgh, was the "beloved physician" of the nineteenth century. The same common consent in our section conferred that title on Tom Long.

The secret of friendship is to forget yourself and love others with a love colored and lit by Christian charity. The failures are the egotists wrapped up in self, the doctrinaires in chains to a dogma, the Pharisees who despise their brethren. Tom Long had a genius for friendship and with Abou Ben Adhem he said to the angel writing in a book of gold: "Write me as one that loves his fellow man." Like Sir Walter Scott he spoke to all "as if he was their blood relation." His joyous vitality, his unfailing and universal sympathy, his spontaneous and uniform courtesy, his interest in all that pertains to men and women, his devoted loyalty, endeared him to all. He made a light and warmth around him. To know him was to love him. In his passing he has left us not only the products of his life as a helper and friend of mankind but almost his bodily presence, a personality which to his friends is as real and vivid as if in the flesh he still moved among us. He still haunts his own community like an emanation from its changeless river and plains, so that one almost looks to see on some path in an autumn gloaming his smiling face and to hear again the kindly tone of his voice.

We cannot believe that his radiant vigor and bouyant cheerfulness fill the devouring grave.

O strong soul, by what shore
Tarriest thou now? For that force,
Surely, has not been left vain!
Somewhere, surely afar,
In the sounding labor house vast
Of being, is practiced that strength,
Zealous, beneficent firm!
Yes, in some far-shining sphere,
Conscious or not of the past,
Still thou performest the word
Of the Spirit in whom thou dost live
Prompt, unwearied as here.

In Memoriam

RESOLUTIONS ON THE DEATH OF DR. FONSO BUTLER WATKINS

When a faithful servant of humanity has been connected with an institution for thirty-three years, and has been its head since 1938, his removal by death leaves a vacancy that cannot easily be filled. Such a one was Dr. Fonso Butler Watkins, who closed his long and faithful work for the State Hospital at Morganton on March 8, 1943. The Directors of this Hospital in session assembled present through their committee the following tribute:

RESOLVED, That the State Hospital in the death of Dr. Watkins has lost a valuable and efficient physician, a man in whom were linked simplicity and scientific knowledge, a genial personality, and a friend ever ready to serve; be it further

RESOLVED, That North Carolina has lost a psychiatrist who was recognized not only in this state as President of the North Carolina Neuro-Psychiatric Society, but also in many other states through the valuable papers given on this subject. His interest as a physician was shown by his membership in the County and State Medical Societies, the American Medical Association, the American Psychiatric Association, and his Fellowship in the American College of Surgeons. His scholarship was evidenced by his membership in the Phi Beta Kappa Society; therefore be it further

RESOLVED, That a copy of these resolutions be sent to the family of Dr. Watkins, be spread upon the minutes of the Board of Directors and that a copy be given also to the press and to the medical journals.

Guy S. Kirby — Mrs. Margaret P. Bailey
J. L. Snyder — H. L. Riddle
C. C. Poindexter — J. H. Beall
Rex Gass

Tuberculosis remains predominantly a disease of adults in their productive years and causes invalidism, loss of earning power, expense of hospitalization and treatment. A. C. Reid. Jour. Industrial Hyg. and Toxicology, Oct., 1940.

BOOK REVIEWS

Psychosomatic Medicine: The Clinical Application of Psychopathology to General Medical Problems. By Edward Weiss, M.D., Professor of Clinical Medicine, Temple University Medical School, and O. Spurgeon English, M. D., Professor of Psychiatry, Temple University Medical School, Philadelphia. 687 pages. Price, $8.00. Philadelphia: W. B. Saunders Company, 1943.

When Dr. William MacNider was president of the State Medical Society, he chose for the subject of his presidential address "The Balanced Mind in Medicine." The need for a balanced mind becomes increasingly apparent to the physician, whether general practitioner or specialist, who is forced to deal with the symptom complexes brought about by the influence of the emotions upon the bodily functions. Unfortunately most medical books deal with the problem from one angle or from the other, but fail to keep the necessary balance between the psyche and the soma.

This book, written in collaboration by an internist and a psychiatrist, keeps the balance between the two extremes well. Richly illustrated with actual case reports, it is a real aid to the family doctor who is confronted with a woman who has developed severe digestive or cardiac symptoms since her husband or son went to the army. No attempt is made to draw a sharp line of demarcation between physical and mental disease, but it is recognized that many patients present both components. The book lives up to its subtitle, "The Clinical Application of Psychopathology to General Medical Problems."

The Pathology of Trauma. By Alan R. Moritz, M.D., Professor of Legal Medicine, Harvard Medical School. 386 pages with 117 illustrations. Price, $6.00. Philadelphia: Lea and Febiger, 1942.

The contents of this volume should be of great interest to physicians living in this traumatic age. The title of the book, however, is misleading. This treatise presents the clinical conditions resulting from trauma, and uses pathological data to explain the mode of their development and to point out the reason for the possible after-effects. This is in marked contrast to the usual accumulation of morbid anatomical facts so characteristic of books dealing with pathology.

The first portion of the book deals with the general fundamental pathological processes associated with various agents of trauma and the response of tissues to these agents. Discussions of the peculiar responses of the special organs and systems of the body to traumatic agents comprise the bulk and remainder of the volume. The neophyte in the field of legal medicine will find the discussions on drowning and the various types of assault to be clear, concise, and sound. Just enough statistical data are presented to give the reader an idea of the frequency of the injuries and their sequelae. The photographs, microphotographs, and diagrams are excellent. References for more detailed study are placed at the end of each chapter.

The Pathology of Trauma is heartily recommended to anyone interested in the effects of trauma on the body. All coroners, medical examiners and pathologists should be acquainted with its interesting content.

Obstetrical Practice. By Alfred C. Beck, M.D., Professor of Obstetrics and Gynecology, Long Island College of Medicine; Obstetrician and Gynecologist-in-Chief, Long Island College Hospital, Brooklyn. Ed. 3. 950 pages. Price, $7.00. Baltimore: The Williams and Wilkins Company, 1943.

Obstetrical Practice by Alfred C. Beck is a well written, well illustrated manual, covering the essential aspects of obstetrics. The chapters on the mechanism of labor are worth the price of the book alone, for every step is so simply explained and so well illustrated that no student could fail to understand the underlying principles of obstetrics. The section on operative obstetrics has been completely rewritten so that the practitioner as well as the student may obtain a clear concept of the purpose and technique of each procedure.

This presentation of obstetrics is far superior to most textbooks on this subject for use in medical schools, because it is so simple, understandable, and intensely practical. For this reason it is highly recommended for teaching purposes and for students, although it is not as satisfactory as other textbooks for the library of the specialist.

Indigestion: Its Diagnosis and Management. By Martin E. Rehfuss, M.D., Professor of Clinical Medicine, Jefferson Medical College, Philadelphia. 556 pages, illustrated. Price, $7.00. Philadelphia: W. B. Saunders Company, 1943.

This long-expected book represents the essence of the author's thirty years of experience in dealing with gastro-intestinal disorders. As the author states in the preface, "This book is written for the general practitioner. He is the clearing house for all the ills of the flesh, not the least of which is indigestion." The book is written simply and clearly, and is eminently practical. A valuable feature is the number of prescriptions that the author has tested and found good.

While surgery is advised in certain conditions, the treatment described is purely medical, and most of it can be carried out in the home.

One debatable chapter is that on x-ray examination. In this Dr. Rehfuss urges that every physician interested in the study of gastro-enterology learn to fluoroscope his patients, and to make and interpret x-ray films. Unquestionably Dr. Rehfuss is a master of his chosen field of gastro-enterology, and doubtless he is accomplished in x-ray technique; but it is questionable if every medical man should be encouraged to own and operate an x-ray outfit. Another doubtful point is the quasi-endorsement of Larostidin, a histidin product, of which it is said: "In our experience success was obtained in 66 per cent of cases, but after several years there was a recurrence in two-thirds of the cases." Certainly this is a far happier experience than most men in this vicinity have had.

As a whole, Dr. Rehfuss has made a notable contribution to the field of gastro-enterology, and his book can be recommended heartily to the internist and general practitioner.

There are one and one-half times as many deaths from tuberculosis among men as among women. The preponderance of deaths among men is in the older age groups, the reverse is true among women. Mary Dempsey, Nat'l Tuber. Assn.

The 1942 Year Book of General Therapeutics. Edited by O. W. Bethea, Ph.M., M.D., F.A.C.P., Professor of Clinical Medicine, Tulane University School of Medicine. 512 pages. Price, $3.00. Chicago: The Year Book Publishers, Inc., 1943.

Medical literature is so abundant that even in normal times it is virtually impossible for most physicians to cover the fields of their own particular interest, much less those of the subject as a whole. The volume under consideration serves a most useful purpose in presenting within the confines of a single small volume an epitome of the advances made in general therapeutics during the past year as gleaned from the literature. The book can be recommended to all general practitioners desirous of acquainting themselves with the many advances recently made in the treatment of disease.

The 1942 Year Book of Neurology, Psychiatry and Endocrinology. Edited by Hans H. Reese, M.D., Professor of Neurology and Psychiatry, University of Wisconsin Medical School; and Nolan D. C. Lewis, M.D., Professor of Medicine, University of Wisconsin Medical School. 768 pages. Price, $3.00. Chicago: The Year Book Publishers, 1943.

This volume of the Year Book series summarizes in abstract form the literature on neurology, psychiatry and endocrinology which appeared during 1942. Subjects of current interest such as the treatment of migraine, the significance of urinary ketosteroids, meningitis, war psychiatry and hundreds of other matters of practical importance are clearly and succinctly analyzed. The inclusion of endocrinology in this volume seems to the reviewer somewhat incoherent, but since this subject is treated in a separate section, it adds to the usefulness of the volume as a whole. The book should prove of greatest value to the general practitioner in keeping him abreast of advances in these fields of medicine.

The Hormones in Human Reproduction. By George W. Corner, Director, Embryological Laboratory, The Carnegie Institution of Washington. 265 pages with index. Price, $2.75. Princeton, New Jersey: Princeton University Press, 1942.

This book, which was a recent Scientific Book Club selection, represents the substance of the Vanuxem Lectures given by Dr. Corner at Princeton University. The lectures were written for a lay audience and the result is eloquent evidence of the possibility of presenting in a simple manner so complex a subject as the endocrinology of the reproductive system. To the reader who has despaired of mastering the complexities of the sex hormones and the physiology of reproduction, this book will be a pleasant revelation.

Every hospital patient who produces sputum, regardless of his diagnosis, should at least have his sputum examined for tubercle bacilli. A tuberculosis-conscious medical staff will order more x-ray films of the chest, especially among the groups of patients in whom the disease is more prevalent. The hazard of exposure from the hidden cases of tuberculosis on the wards of general hospitals will remain until such time as fluorograms are used routinely in the admission departments. Jason E. Farber, M.D. and Wm. T. Clark, M.D., Amer. Rev. of Tuber., Feb. 1943.

Where there is no seed, there can be no harvest regardless of the type of soil. Elimination of open tuberculosis from the community means ultimate eradication of the disease. Obviously any program for tuberculosis control must include finding not only the infectious cases but also those in the non-contagious or minimal stage of the disease. With the dramatic and popular appeal of special tuberculosis case finding, one is apt to ignore the basic principle of the epidemiology of tuberculosis. The longer and the more intimate the exposure, the greater the risk of the exposed person regardless of age level. Hilbert Mark, M.D., Amer. Rev. of Tuber., Aug. 1942.

Clinical Evaluation of 'Seconal Sodium'

During the course of a year, Dietrich (Anesth. & Analg., 22:28, 1943) attempted to evaluate 'Seconal Sodium' (Sodium Propyl-methyl-carbinyl Allyl Barbiturate, Lilly) as a sedative in general pediatric practice. Over 3,700 doses of the drug were administered to more than 500 children and infants, both private and ward patients, without any untoward effects on pulse, temperature, blood pressure, or cerebrospinal fluid pressure. The drug proved to be an excellent general sedative possessed of some analgesic action, and in tetanus and in the performance of certain otherwise painful procedures where a general anesthetic was not desirable, such as pinch grafts, lumbar punctures, myringotomies, and incision and drainage of minor abscesses, it was of particular value.

When the age of the patient and freedom from gastric symptoms permit, 'Seconal Sodium' should be given by mouth. When administered by rectum, however, its action is only slightly retarded. The intact capsule may be inserted in the manner of a suppository by first pricking each end of the capsule with a pin; or, where fractional doses are desired, the powder may be suspended in tap water and given by rectum with a small syringe.

Dietrich found that for good sedation in children of average nutrition the following doses were appropriate: 1-3 months, ¼-½ gr. by rectum; 3-6 months, ½-¾ gr. by rectum; 6-36 months, ¾-1 gr. by rectum; 3-8 years, ¾ gr. by mouth or ¾-1½ grs. by rectum; 8-15 years, ¾-1½ grs. by mouth or 1-1½ grs. by rectum. For very deep sedation or for light analgesia some increase in dose may be necessary. Any dose in this schedule may be repeated safely once within an hour if the desired result is not obtained, or may be given with impunity every 3-4 hours if circumstances demand prolonged sedation.

During Food Shortages

It is well to bear in mind that **dried brewers yeast, weight for weight, is the richest food source of the Vitamin B Complex.** For example, as little as 1 level teaspoonful (2.5 Gm.) Mead's Brewers Yeast Powder supplies: 45% of the average adult daily thiamine allowance, 8% of the average adult daily riboflavin allowance, 10% of the average adult daily niacin allowance.

This is in addition to the other factors that occur naturally in yeast such as pyrodoxin, pantothenic acid, etc.

Send for tested wartime recipes, the flavors of which are not affected by the inclusion of Mead's Brewers Yeast Powder. Mead Johnson & Company, Evansville, Ind., U. S. A.